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ABSTRACT

This book discusses the application of the Deming Management Method to higher education in order to improve the management practices and operations of American colleges and universities. The contributing articles are as follows: (1) "The Parable of the Red Beads" (Joseph A. Burke); (2) Constancy of Purpose for the Improvement of Product and Service" (Ronald K. Dye); (3) "Adopt a New Philosophy" (Juanita P. Fain); (4) "Cease Dependence on Mass Inspection" (Samuel C. Heady); (5) "End the Practice of Awarding Business on Price Tag Alone" (Terrence J. Hogan); (6) "Improve the System of Production and Service" (Dawn G. Hughes); (7) "Institute Training" (Linda L. Hunt); (8) "Institute Leadership" (Ronald J. Hyson); (9) "Drive Out Fear" (Luther G. Smith); (1) "Break Down Barriers between Departments" (D. Kevin May); (11) "Eliminate Slogans, Exhortations, and Targets for the Work Force" (Shirley E. Meiners); (12) "Eliminate Numerical Quotas" (Tess Midkiff); (13) "Remove Barriers That Rob People of Pride of Workmanship" (Judy E. Shonebarger); (14) "Institute a Vigorous Program of Education and Retraining" (Stephen E. Miller); (15) "Take Action To Accomplish the Transformation" (Joan P. Moser); and (16) "Cardinal Diseases and Obstacles" (Richard I. Miller). Most chapters provide references. (GLR)

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College and University Personnel Association

Applying the Deming Method to Higher Education

For More Effective Human Resource Management

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Richard I. Miller, Editor

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Richard I. Miller, Editor

College and University Personnel Association

The College and University Personnel Association (CUPA) is an international network of more than 5,000 personnel administrators representing more than 1,500 colleges and universities. Through regular and special publications and studies, CUPA works to keep its members informed of the latest legal, legislative, and regulatory developments affecting personnel administration, as well as trends and innovative policies and practices in the field. Services include a semimonthly newsletter, a journal, an annual convention, regional meetings, and seminars on timely topics of special interest to the personnel profession. For further information on books of related interest, or, for a catalog of CUPA publications, contact, CUPA, 1233 Twentieth St., N.W., Suite 503, Washington, DC, 20036, (202) 429-0311.

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Contents

Preface v
Acknowledgements vii
About the Editor xi

1 The Parable of the Red Beads 1
Joseph A. Burke

2 Constancy of Purpose for the Improvement of Product and Service ... 9
Ronald K. Dye

3 Adopt a New Philosophy 19
Juanita P. Fain

4 Cease Dependence on Mass Inspection 29
Samuel C. Heady

5 End the Practice of Awarding Business on Price Tag Alone 37
Terrence J. Hogan

6 Improve the System of Production and Service 49
Dawn G. Hughes

7 Institute Training 57
Linda L. Hunt

8 Institute Leadership 65
Ronald J. Hyson

9 Drive Out Fear...75
Luther G. Smith

10 Break Down Barriers Between Departments 83
D. Kevin May

11 Eliminate Slogans, Exhortations, and Targets for the Work Force......91
Shirley E. Meiners

12 Eliminate Numerical Quotas...99
Tess Midkiff

13 Remove Barriers That Rob People of Pride of Workmanship............105
Judy E. Shonebarger

14 Institute a Vigorous Program of Education and Retraining...............113
Stephen E. Miller

15 Take Action To Accomplish the Transformation 123
Joan P. Moser

16 Cardinal Diseases and Obstacles 131
Richard I. Miller

Preface

Currently, the single force that is causing most changes in American managerial theories and practices is the Deming Management Method. Many large and small American industrial and business corporations have embraced his approach, and many others are seriously studying it.

But it was not always so. Snubbed by American business leaders who were not interested in having an accountant tell them how to run their businesses, Deming went to Japan during the United States occupation to help prepare the 1951 Japanese census. He also did some lecturing during that time. He has received the highest award that the Japanese government has given to a non-Japanese—the Second Order of the Sacred Treasure. Today, at 90 years of age, Dr. Deming continues a demanding national and international schedule as interest in his work continues to increase dramatically.

This book endeavors to apply and adapt Dr. Deming's management system to higher education. Some individuals say that higher education has very little to learn from managerial practices of business and industry, while others contend that postsecondary institutions should be run more like businesses. Both extremes are simplistic and miss the mark of this book.

Our effort set out to learn how Deming might benefit the management and operation of American colleges and universities. We started our discussions not as Deming advocates or critics; rather, as a group of professionals who, with no ax to grind, wanted to make as honest and as fair analyses as possible. As a result of our individual researches as well as our extensive group discussions, we came to believe that higher education can learn and benefit from what Deming has developed. However, we may differ from some Deming advocates who contend that his views must be adopted as a whole to be effective. We take a more eclectic and selective approach, and recommend our readers also to adapt not adopt—taking what is useful.

To be sure, there are some absolutes in the Deming method, and perhaps the key one is the essential role of management in the whole process of change for improvement. Those who believe in a caretaker or laid-back role for senior management will not be able to go far with the Deming approach. Furthermore, those who do not support the conclusions drawn from the parable of the red beads will have trouble accepting some other key Deming elements, such as his 85-15 rule: that 85 percent of problems in any operation are management's responsibility and 15 percent are caused by the workers.

We hope this publication will motivate others to look further into how Deming's management system can benefit higher education. As far as we know, this is the first book length study of this matter; we look forward to other major efforts in the near future....There is much to learn and more dialogue needed on this important management system.

Richard I. Miller
Editor

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Professor Richard I. Miller teaches and advises graduate students in higher education and coordinates the Educational Leadership Program at Ohio University. Other classroom teaching experiences include the University of Illinois at Urbana, the University of Kentucky where he also served as chairperson, Southwest Texas State University, and Cornell University as a visiting scholar.

Senior academic administrative experiences include academic vice-presidencies at Southwest Texas State University, the State University of New York at Brockport, and Baldwin-Wallace College. Other administrative experiences include serving as a senior academic program officer with the Illinois Board of Higher Education, Executive Secretary for a Presidentially appointed national committee on experimentation and innovation, and director of a program on educational change at the University of Kentucky.

His writings include four Jossey-Bass books and two booklets: (Co-Ed) *Issues in Personnel Management* (1988), *Evaluating Faculty for Promotion and Tenure* (1987), (Ed) *Institutional Assessment for Self-Improvement* (1981), *The Assessment of College Performance* (1979), *Developing Programs for Faculty Evaluation* (1974), and *Evaluating Faculty Performance* (1972). Other professional contributions include nine books, most recently, *Major American Higher Education Issues and Challenges in the Nineties* (1990), and (Ed) *Evaluating Major Components of Two-Year Colleges* (1988); a dozen chapters in books; and over 75 articles.

Consultation, speaking, and workshop experiences include many campuses in every section of the nation and a number of international assignments. Dr. Miller has been active in several national associations and studies, and he has held several national offices. Recently he has served as the elected chairperson of the statewide Faculty Advisory Committee to the Ohio Board of Regents. He is a member of the Cosmos Club, Washington, D.C.

1

The Parable of the Red Beads

By Joseph A. Burke

"The Parable of the Red Beads" is basic to understanding the operating philosophy of the Deming Management Method. The red bead experiment is conducted in order to demonstrate how results are influenced more by systems than by the talents of individual workers.

THE EXPERIMENT

Deming's experiment involves 4,000 beads, of which 3,200 are white (80 percent) and 800 are red (20 percent). Two containers are used, one smaller than the other. In addition, a paddle with 50 holes, each slightly smaller than the circumference of the beads and arranged in five rows of ten, is employed. Deming sets up an assembly line that begins with all of the beads in the smaller container. The beads must be poured into the larger container in a precise manner, and the paddle then dipped into the container to extract 50 beads at a time. "Management" desires only white beads because that is what the customers are buying. Inevitably, however, both red and white beads are scooped from the container.

The experiment involves six workers taking four turns each (each turn represents a day) on the "production line" trying to extract only white beads with the specially designed paddle. In addition to these workers, there are two "quality control inspectors." Deming sets these two inspectors up in such a way that they are not cooperating with each other as much as they are working in fear of each other: one is constantly examining the other's work for mistakes.

The first inspector counts and records the number of red beads on the paddle each time it is dipped into the larger container. The chief inspector, who is ultimately responsible for reporting the final count, verifies the first inspector's work by recounting each time the red beads on the paddle (Walton, 1986). This activity is analogous to traditional methods of quality inspection or "quality control."

Predictably, varying results are obtained by each of the individual workers despite adherence to very stringent guidelines and despite exhortations by the "foreman" to improve productivity. Deming played the role of the foreman and established very strict guidelines for pouring the beads from one container to the other as well as for the proper method of dipping the paddle into the larger container and extracting the beads. In addition to these guidelines, he established rules for the workers which included no departures from the procedures, no suggestions from the assembly line workers for improvement, and no resignations from the job.

The results of the experiment indicated that over the four-day period, a daily average of red beads could be calculated for each worker as well as for the group as a whole. Using a mathematical formula, Deming established what he refers to as Upper Control Limits and Lower Control Limits for the statistical control of quality (Walton, 1986). This approach differs from the conventional statistical method of calculating a single daily average for the four days and then using that average as the measuring stick for improving production. At this point managers usually do not view the system as a whole but rather just focus on specific areas that are below average and then try to make piecemeal improvements. This technique ignores the potential effect that this tactic may have on the whole system.

In higher education, for example, efforts to increase enrollment by lowering admission standards can affect the overall quality of students in academic programs. If entrance standards are lowered to accommodate more students, then an overall decline in academic achievement could result.

Deming's formula established a range of reasonable levels of performance for workers, recognizing that mistakes (red beads) will be made. He insists that it is not necessary to eliminate every error that exists in the system; in fact, management's efforts to fine tune a system may be detrimental. Mistakes that fall between the Upper Control Limits and Lower Control Limits are acceptable. Deming believes that efforts to improve a system or organization by piece work is harmful because any changes made will eventually affect the entire system. The only way to change or improve an organization is to view it as a whole and implement changes throughout the entire system.

Deming concluded his parable with five lessons to be learned:

Point 1

Variation is part of any process. Regardless of how exact are the specifications established by management, the number of red beads extracted from the container will always vary. This point is true in higher education settings as well. For example, teaching styles and methods vary among academic disciplines. Attempts to impose uniform guidelines for instruction across disciplines could be counterproductive. Some disciplines will rely more heavily upon performance in laboratory settings than others. The same point holds true for the various testing methods that faculty use in that some material is better suited for essay rather than for objective tests. Regardless of whether consideration is given to test scores or to teaching methods, no amount of prodding or goading will, or should, establish uniform procedures on the classroom testing or teaching approaches.

Point 2

Planning requires prediction of how things and people will perform. Tests and experiments of past performance can be useful but not definitive. Given the four days of work on the assembly line, for example, one can project a daily average of red beads, and over a period of time a degree of confidence can be developed based on these data.

At the same time, Deming believes that it is important to develop a plan that allows for flexibility. As institutions of higher education prepare budgets based on enrollment forecasts, for example, it is desirable to develop planning approaches that are sufficiently flexible for unexpected decreases in enrollments.

Deming believes that the empirical evidence is never complete and more data can always be collected and used. In higher education settings, retention efforts on many campuses are becoming increasingly sophisticated, and efforts to track student activities both inside and outside the classroom can produce an abundance of data. Strategies for developing effective retention programs on campuses flow from these data and decisions are made. While retention programs are being implemented, more information that will be used for decisions in the future is continually collected and eventually put back into the system.

Higher education officials can put to good use Deming's very strong allegiance to decision-making based upon accurate and timely data. While vigorous lip service to data based decision-making is almost uniform, too often intuition, experience, or hope crowd into high level postsecondary decision-making. A Deming credo of "In God we trust.

All others must use data" (Waldon, 1986) is a credo for higher education officials also.

Point 3

Workers work within a system that is beyond their control. It is the system, not their individual skills, that determines how they perform. The system for pouring the beads from one container to the other and for extracting them with the uniquely designed paddle is tightly controlled. There are rigorous procedures that are put in place to ensure uniformity of operation, yet the results are different each time. The system is represented not only by the procedures that are employed but also by the tools that are used. The design of the paddle, the size and weight of the beads, and the size of the container all influence the outcome, and these factors have a greater influence over the results than do the talents of the individual workers. Deming emphasizes that the red beads are defects that exist within the system and that the workers are merely exposing them (Storey, 1989).

In higher education, tests are used as one means of evaluating performance, and yet they may influence the outcome if teachers "teach to the test." Thus, actual student competencies may not improve even though actual test scores might increase.

In a broader sense, the practice of testing individuals rather than assigning group projects may undermine the notions of cooperation and collaboration. Thus, competition between individuals and self-improvement are rewarded and encouraged. Similarly, college or university professors seeking tenure will adhere to the guidelines put forth by the system. If research and publishing are the main criteria for advancement, then classroom teaching will be given less weight and substantial improvement in teaching will have to come from other institutional motivators.

Point 4

Only managers can change the system. Deming believes that only those who control the procedures or the system are in a position to change that system (Conway, 1980). The workers can be highly talented and skilled, yet without the means to sway policy and procedure they are unable to change the system.

Established administrative procedures may require departments within a college or colleges within a university to compete against each other for human and material resources, yet interdisciplinary academic endeavors are not necessarily fostered when funding levels depend upon full time equivalencies (FTE's) within a college. Some forms of competition, however, established with guidelines that serve the overall good of the institution, can be beneficial. Institutionwide competition for specially designated pools of funds can result in new or innovative academic approaches.

It is equally true, however, that even if managers desire to change a system, they may be sabotaged by the workers who prefer the status quo. For example, proposed collegiate curricular changes likely would not be implemented without the consent and cooperation of the faculty even if backed by senior academic officials at the university or college.

Point 5

Some workers will always be above average, some below. The variation in the number of red beads extracted from the container illustrates that some people will exceed expectations and others will fall short. Regardless of how many times the experiment is conducted, this finding will always be true.

The strength of the red bead experiment comes from focusing attention on and scrutinizing the entire system. Often managers are more likely to criticize or find fault with the workers and not study the system itself. It is no coincidence that Deming concentrates on the red beads which, in fact, represent the mistakes. He uses this approach to illustrate the point that managers frequently center on mistakes made rather than on the things that are done correctly.

Higher education officials, since about 1984, have been subjected to much criticism and scrutiny. Parents, students, lawmakers, and public officials have assailed the poor performance of colleges and universities in preparing graduates for the world (Bloom, 1987). Educational institutions are blamed for many of society's problems, and in some cases have become a convenient scapegoat for societal ills. As a result, pressures have been placed on higher education to correct these problems. For example, qualification for federal financial aid has been tied to selective service registration along with mandatory statements from students asserting that they are drug-free. It is not reasonable, however, to expect higher education to be a panacea for the ills of society. Rather, each institution should develop and use its own unique strengths (Sergiovanni & Corbally, 1986).

CONCLUSIONS

Deming stresses the importance of considering systems as wholes, arguing that to particularize or take a piecemeal approach is not productive. Similarly, Deming's 14 points form a whole; all must be adopted in order to effect meaningful change.

Colleges and universities are unique organizations that are difficult to govern and to understand. The tendency when facing a complex problem is to break it down into smaller more manageable pieces and attack it from that perspective. Given the nature of colleges and universities, it is important to resist this approach, however, and to understand that the entire system must be taken into account. What happens in the classroom can affect the prestige of the institution, which has implications for fund raising. Successful fund raising campaigns can influence admission criteria; and admission standards can have a bearing on the caliber of faculty that is attracted to the institution. The interplay between the numerous subsystems is not only complex but also never ending. This point affirms one of Deming's major theses: the importance of viewing the system as a whole.

Additional applications of the beads experiment and Deming's 14 points can be made to higher education. Deming's points illustrate the difference between design standards and performance standards. Design standards are developed on the basis of established components that are configured in some preordained way. Everyone in the organization is directed to hold to the design. This is the red bead experiment. Performance standards, on the other hand, are constructed with clear-cut criteria and objectives that must be achieved. The difference is that managers leave flexibility for the workers who build and operate the system to do so in a creative fashion.

For example, on a residential campus that stresses the goal of community, all personnel, including academic, clerical, and nonacademic support staff, need to support that goal consistently. If those in charge begin to dictate in detail exactly how to go about achieving community, it will probably result in failure and resentment. Such an approach represents a reliance on design standards.

If, on the other hand, managers spell out to staff members the need and desire to attain this campus goal, and if flexibility is encouraged in establishing individualized methods for achieving the goal, then the results will likely be much more positive. This approach, the performance standard, will result in some red beads being made. These mistakes will be within an acceptable range, however, and will not detract appreciably from the overall performance.

Finally, results are influenced more by systems than by the talents of individual workers. Certain aspects of higher education are not immune from this dictum. Although Deming's management method was developed for the business world, it does have genuine applications to higher education settings.

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2

Point One: Constancy of Purpose for the Improvement of Product and Service

By Ronald K. Dye

Why are many companies in the United States on the decline? Why has the balance of trade in America deteriorated for the past 20 years? We have natural resources, we have people, and we have experienced leaders—elements required to produce effectively, yet our productivity and quality had declined until about the mid-1980s. Deming places the blame on the American manager as being responsible for this country's dramatically declining levels of quality and productivity (Walton, 1986). Managers have neglected the job of management, striving instead for higher quality dividends and good profit performance of the company's stock.

Deming's first point means adapting to changing circumstances in order to stay in business. Deming (1986) believes that an organization should "create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs" (p. 23).

The first priority of most organizations is to survive. Future success requires that management develop both plans and methods for becoming competitive and staying in business. Such a plan requires answering the following basic questions: What products and services do we want to provide? How will we compete? Where do we want to be in five years? Ten years? It involves an evaluation of what goals an organization aspires to accomplish and how effective it will be in reaching these goals.

Deming (1986) states: "Your customer, your suppliers, your employees need your statement of constancy of purpose—your intention to stay in business by providing product and service that will help man to live better and which will have a market" (p. 26).

Constancy of Purpose, as defined by Deming, consists of three components: innovation; constantly improving the design of both product and service; and putting resources into research and education. These three components are quite applicable to higher education in the 1990s.

INNOVATION

Deming (1981) is critical of those organizations that resist change, thwart new ideas, and protect the status quo. New products or services come into existence through the successful development and application of a novel idea. From Deming's standpoint, innovation consists of more than introducing a product "for the mere sake of having something to sell. The product—or service—must have a market, and be able to help people to live better materially in some way" (Walton, 1986, p. 56). Further, he emphasizes that "it is possible and in fact fairly easy for an organization to go downhill and out of business making the wrong product or offering the wrong type of service" (Deming, 1986, p. 26).

CONSTANTLY IMPROVE DESIGN OF PRODUCT AND SERVICE

Hodgetts (1986) reports that many American organizations "are now coordinating their product design and production planning so that after producing a limited number of one product model, they switch and start manufacturing something else" (p. 398). Deming's premise challenges this strategy because he believes great gains can be achieved by constant improvement in the design of already existing products. He emphasizes that management has to be committed to constant improvement in the product or service offered. This obligation to the consumer never ceases, for it will no longer suffice to have customers that are merely satisfied. What is required is "loyal customers, the customer that comes back, waits in line, and brings a friend with him" (Deming, 1989, p. 4).

Meeting society's demands necessarily begins at the product design stage. Translation of demands into a design that fits both the customer's demands and the company's manufacturing capability requires communication between the manufacturer and the user. Scherkenbach (1988) writes, "Consumer research is a continuous process by which the product is continually improved and modified to meet changing requirements of the consumer" (p. 10).

Inherent in Deming's constancy of purpose are two concepts related to consumer research: consumer input and modern statistical methods.

Consumer Input

The single most important activity of any organization is the development of a superior product that meets the needs of certain groups of consumers. To meet these needs, Deming (1981) maintains that product improvement has to start with the customer. He contends that input from the customer should be sought throughout the design/production/marketing cycle. On the basis of the information developed, management can assess those attributes that consumers believe should be incorporated in the product, both in terms of the level wanted and the relative importance of each. The product then should be tested intensively to determine whether the physical attributes of the product lead to customer satisfaction and preference.

Modern Statistical Methods

Boyd, Westfall, and Stasch (1989) report that modern statistical methods, such as sampling and experimental design, are the most widely used techniques in marketing research. The essence of Deming's method for achieving improvement in product design is statistical. Every process, whether it be in the office or on the company floor, has variation from the ideal. He believes that it has become increasingly important for the research worker to understand some of the principles that unite all methods for statistical inference. Decisions, in so far as possible, have to be based on accurate and timely data. Deming believes, "Only with the proper use of statistical methods can people minimize confusion in the presence of variation. Statistical methods help to understand processes, to bring them under control, and then to improve them" (Walton, 1986).

PUT RESOURCES INTO RESEARCH AND EDUCATION

The decline of America's competitive position in international markets has prompted Deming to question the speed and efficiency with which an organization is able to translate basic research into successful products. Recent and very rapid developments in research have generated an increased need for skilled professionals and highly trained employees. Deming (1981) argues that new ideas and technologies that can be developed into successful new products require innovation, research, and education, backed by enough capital to develop and introduce the product. He believes that failure to provide adequate resources for research and education will result in declining productivity, lagging innovation, and the loss of future domestic and foreign competitiveness.

For many American companies, however, the process of developing a novel idea into a new product is an expensive and risky venture. A considerable amount of time may be required before the product is ready for the market. Long term investments with no immediate or guaranteed payoff are unattractive, given scarce resources and high interest rates.

RELEVANCE TO POSTSECONDARY EDUCATION

Although Deming's Point One has been applied almost exclusively to business and industry, it has direct relevance to post-secondary education. Educational administrators spend considerable time and effort making decisions about individual courses and curricula, academic majors, and programs. These educational products are services the institution provides to the consumer. At the most fundamental level is the core product, which answers these questions: What is the customer really seeking? What need is the product really satisfying?" (Kotler & Fox, 1985, p. 223). The core product of an institution is its curriculum.

Intrinsic in the curriculum are three points that are relevant to Deming's constancy of purpose: curricular change, curricular evaluation, and institutional research.

Curricular Change

Deming's emphasis on the need for innovative change is a theme well-received by many college leaders. The Commission on Non-Traditional Study reports: "A new majority of `part-time students,' an increasing proportion of older, adult students in college student bodies, and the increasing number of educationally disadvantaged students are indicative of a changing composition of student groups that require curricular adjustments or alterations" (cited in Fincher, 1986, p. 289).

Cosand (1986), in examining the relationship between curriculum and students, proposes that students enrolled should be one of the major forces in curriculum design and development. He writes that courses should be added, modified, or deleted in those institutions where there is a rapid change in student mix. Colleges and universities usually lag noticeably behind the changing needs of students.

College Development Programs

Donavan (1985) emphasizes the need for innovative changes in many college development programs. As the number of recent high school graduates declines, it is increasingly unlikely that many institutions facing enrollment declines will deny admission to academically underprepared applicants. The emphasis on basic skills instruction in college development programs should be complemented by the creation of interdisciplinary courses so that students develop the skills necessary to successfully cope with the challenges of society. According to Donovan, these skills should include such tools as "critical thinking, synthesis, and independent learning" (p. 124).

The New Curriculum

Fostering innovative changes to an institution's curriculum is a complicated and time consuming undertaking that requires administrative leadership, commitment of energy and resources, and instructional and support staff that believe in the need for change and in their own abilities to design and implement change. In the nineties there will be increasing pressure for institutions to shift the balance from an emphasis on teaching to an emphasis on learning. The challenge to higher education today is to develop a curricular agenda for the twenty-first century. Levine (1989) writes:

> *A curriculum for the twenty-first century will need to educate students in two languages all people must speak and live in this country—words and numbers. We need to teach students about the common human agenda—human heritage, science and technology, global perspectives, ethics and values, social institutions and all the rest—no matter what their major is. We need to provide students with education that will prepare them for careers—internships, counseling, practical minors, solid majors that are up to date and meet the needs of today's world. Students also need transitional skills....Finally, for students to develop the personal attributes required in a transitional society, they need an education that will give them a sense of efficacy—a belief that what they do matters (pp. 82-83).*

Change as Innovation

The literature is consistent in saying that curricular innovations are not easily designed, planned, and implemented. Fincher (1986) notes, "Although curricular reform is the most challenging issue in higher education, there is no theory of curriculum development that adequately explains how curricula change, develop and mature" (p. 290). He reports that most curricular changes that have endured are the results of some issue or conflict being resolved in a manner that is generally accepted as being better than whatever they replaced. Observations of curricular changes over a period of time suggest that "where innovation does succeed, it often becomes a pale shadow of what was envisioned at the start" (p. 290).

Curricular Evaluation

Deming's Point One emphasizes that management has to be committed to constant improvement in the design of the product or service offered. How does an institution know if curricular changes and innovations are having significant effect? Conrad and Eagan (1989) report that many colleges and universities maintain ongoing curricular evaluations, but most do not. Current practices and theories in the literature examine curriculum evaluation from the context of utilization and decision-making (Shapiro, 1986; Weiss, 1988).

Wilson (1989) discusses the four major evaluation models that are currently being used in higher education. These four models are quite relevant to Deming.

Goal-based Approach

The goal-based approach emphasizes the identification of program goals and objectives, program outcomes are measured, and a judgement is made on the extent to which these goals or objectives have been met. Limitations of the goal-based approach to evaluation include: the need to focus on program process and to offer recommendations for program improvement; and an *a priori* definition of program goals and outcomes reduce the scope to focus on a small set of variables.

Responsive Approach

The responsive approach focuses primarily upon activities rather than upon formal goals and objectives. The evaluator conducts a series of interviews or surveys with program personnel in order to determine program requirements and expectations. Critics of the responsive approach question the subjective nature of the investigation.

Decision-making Approach

The decision-making approach emphasizes a continual exchange between the evaluator's activities and the information needs of the administration. The CIPP (Context, Input, Process, Product) model that was developed initially by Daniel Stufflebeam involves four types of evaluation activities: context evaluation to help decision-makers determine objectives; input evaluation to clarify ways that resources can be allocated to achieve project goals; process evaluation to provide continual feedback to persons who must make various decisions during implementation; and product evaluation to determine if an activity should be continued, revised, repeated, or concluded. The major disadvantage of this approach is that the evaluator has to accept the decision context and criteria of the model.

Connoisseurship and Criticism Approach

Under the connoisseurship and criticism approach, experts in the field can discriminate between strengths and weaknesses of individual programs just as connoisseurs of art, music, and literature possess high levels of apprehension in their areas of expertise. Conrad and Eagan (1989) state, "The visits of accreditation review teams are based partly on this model; team members' extensive experience gives them a connoisseurship on which to base their judgement about program quality" (p. 58). The major criticism of this approach is that the process involves a small number of experts, and each expert applies his or her own professional opinion in judging outcomes. These four approaches that have been briefly discussed are by no means an exhaustive list. "However, these four have discernible differences and have received the most attention and use" (Wilson, 1989, p. 19).

INSTITUTIONAL RESEARCH

Educational institutions operate within a complex and rapidly changing environment, which each institution needs to continually monitor and adjust for its survival and prosperity. Deming would argue that the time is past when an institution can ignore the need for research. The identification of new markets is essential for survival, and, as Deming would insist, requires market research.

Identifying Market Potentials

Kotler and Fox (1985) advocate the use of a program/market opportunity matrix that allows planners to think both in terms of existing, modified, and new programs; and existing, geographical, new markets. The institution can then begin formulation of its strategic plans based on the results of the program/market opportunity analysis.

Employment Surveys

Curriculum reform in postsecondary education during the last ten years has focused on programs that prepare students for vocations and careers (Voorhees, 1987). Accordingly, the techniques most frequently used focus on employers and employment needs. Voorhees (1987) reports, "The most popular of these techniques, the employer survey, promotes employer involvement in program development...." (p. 43).

Lucas (1986) suggested the possibility of conducting a massive, comprehensive employer needs survey of all employers in a given geographic area. In some cases, this area may be nationwide. The results could be used to rank order career fields by the number of job openings. If properly done, Lucas (1986) argues that "this method provides the most logical framework for making decisions concerning reduction, deletion, expansion, or addition of various curricula in higher education" (p. 240). Such a study would require a great deal of time and money. In addition, many employers would not be able to respond intelligently to a general request to forecast all employment needs.

According to Lucas (1986), "The other philosophical approach is to conduct limited surveys of specific employers, asking them about their reaction to adding, deleting, reducing, or expanding one specific curriculum" (p. 240). Employers would then be in a better position to respond to a specific proposal than to a general forecast of all their employment needs. The disadvantage of this method is not knowing in advance the priority order of the various program ideas since the specific proposals must be obtained in a less than systematic manner.

CONCLUSIONS

Deming's Point One is relevant to postsecondary education in terms of its emphasis on innovation, product improvement, and research. Establishing Point One requires administrative leadership, commitment of energy and resources, and faculty that are convinced of the need for change.

The concern about college curricula is very likely to increase in the next few years. Efforts to cope with financial constraints and uncertain enrollment will cause reexamination of mission and accountability of programs and courses. These factors may result in curricular changes that could not be implemented under more favorable conditions. The challenge to postsecondary education is to develop curricula that will move the institution effectively and efficiently into the next century.

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3

Point Two: Adopt a New Philosophy

By Juanita P. Fain

"We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change" (Deming, 1986, p. 23).

This philosophy advocated by Deming in Point Two is quality. The reason quality must become what he has coined the "new religion" is two-fold. First, Japan is in the forefront of a new economic age of reliability and efficient operation. During the post-World War II Period, American-manufactured items, produced under economies of scale, dominated the market. When Japan became competitive in the late 1950s, however, the U.S. economy was no longer an isolated and insulated market. All producers and providers of goods and services are now in the international market. Subsequently, because of new standards, the adverse conditions created by traditional organizational systems are no longer affordable or tolerable. Poor workmanship, mistakes, defects, poor materials, handling damage, fearful and uninformed workers, inadequate training, executive job-hopping, and unresponsive services are included in these undesirable by-products. (These aspects are equally undesirable in higher education.)

Deming believes that the cost of living depends inversely on the goods and services that a given amount of money will buy. Reliable service reduces costs while delays and mistakes raise costs (Walton, 1986). Because they pay for the delays and mistakes related to goods and services, the consumer's standard of living is reduced. Businesses often do not learn of their customer's dissatisfaction because instead of complaining, they switch to a different company or organization. When the system was producer-driven, the consumer bought what the producer made. Now that the economy is more market-driven, consumers choose from an array of products made by many producers—some American, some not. As a result, quality is more important than it was in the past.

While the appropriate systems and devices must be in place to support and improve quality, quality itself is not a technique. Quality, as Deming defines it, is a way of life; and it is generated from a high level of passion and pride among employees that is initiated and sustained by top management. Furthermore, top management controls the systems that can foster or inhibit this type of quality-driven culture within an organization. Quality also comes from the belief that anything can be made better. The possibility of perfection and infinite improvement would be the message to be communicated within and throughout the organization that adopts this new philosophy of quality. Deming advocates a transformation of management to address the issue of quality in American business.

ANALYSIS

Deming contends that people must believe in quality, and he uses the term "religion" to emphasize the conscientious commitment and devotion to quality that is required to establish industrial and economic integrity and pride in America. Excellence and quality are currently popular subjects in the business world, and other sectors of society are seeking new ways to promote them as well.

Senior management officials are in a position to define quality. They have the ability to build a language and consensus around it, reinforce the definition, and allocate resources in a way that each member of the organization sees that quality is rewarded. This is why Deming contends that a transformation of management is necessary. He argues that management structures have been inadequate for two decades, but were not detected because the market continued to expand. With the advent of global competition, weaknesses in the system have become noticeable (Walton, 1986).

The basic problem is that the existing system focuses more on material goods rather than on human resources. Quality, however, is created and sustained by people. This understanding demands a new style of management in which the manager empowers workers to determine how they can best do their jobs. Without the commitment that only individuals can offer, superior quality will not be achieved (Peters & Austin, 1985). Because existing management structures do not generally treat quality as a function of human commitment, Deming advocates they be dismantled.

While Deming presents a compelling argument, a less dramatic initial restructuring of American management systems may be more feasible and palatable to senior managers. The need for change certainly varies from business to business. Accordingly, an examination of existing structures is necessary to salvage components that may contribute to the quality philosophy before damage becomes irreversible. By not suggesting this process as a first step, Deming implies that some aspects of the existing management system in this country are not salvageable. This conclusion may be unacceptable to some managers and executives.

The success of any system-wide restructuring, whatever approach is used, is contingent upon the endorsement and leadership of the senior management within organizations. This message is reiterated throughout Deming's fourteen-point methodology and may be the one issue upon which unanimous agreement can be reached.

RELEVANCES TO HIGHER EDUCATION

As colleges and universities seek effective methods of self-improvement, Deming's philosophy has positive implications. In terms of involvement of senior management, the same open commitment to quality is necessary in postsecondary education. To apply this philosophy, everyone within the institution needs to understand not only what it means, but their own individual role in creating quality improvement. In their rush to join the "enrollment management" parade, colleges and universities may be ignoring their most valuable resource: people. In exploring institutional success, what defines it, and how it is achieved, Noel's research points to its people as the new excitement in American higher education (Johnson, 1987).

Not only must organizations believe in their people, Peters and Austin (1985) contend that employees must feel a sense of ownership and that they are vital to the institution's life. To employ Deming's Point Two, then, educational institutions would involve their people more directly in decision-making. To this end, a more decentralized, loosely coupled structure may be beneficial. In such an environment, the various units and departments within the institution may be responsive to each other, but they also preserve their own identities and some logical separateness.

Connections between organizational subsystems may be infrequent, circumscribed, weak in their mutual effects, unimportant, or slow to respond (Weick, 1976). Or in a more tightly coupled institution, the units and subsystems have a great many components in common and changes in one usually produce changes in others. It has been argued that if coupling were tighter within institutions, communication, predictability, control of processes, and better achievement of goals would be easier (Lutz, 1982). These structural issues come back, again, to management and its transformation. Ensuring that the right people are matched with the right responsibilities is also essential.

Quality Defined

Deming's methodology requires that educational quality be considered in its broadest terms and that it permeate throughout the entire organization and be accepted by employees. Within the context of higher education, quality is often thought of in narrow terms (Marchese, 1989). For students, the primary consumers, the quality of the college experience extends beyond the classroom. Because only a small percentage of their waking hours is spent in class, the basis of quality is more widely determined by the many individual relations and activities that occur campuswide.

Before a clear definition of quality can be determined, the institution's mission and subsequent goals and objectives of higher education need to be established and accepted. Two aspects of consideration are necessary, that is, higher education as an industry and as individual institutions. As an industry, broad issues of learning outcomes, operating efficiency and effectively, and on-going assessment of the system seem to be appropriate perspectives for which direction might be provided. Each college and university, however, must then establish its agenda in more specific aspects such as curriculum reform, teaching-learning processes, student-faculty relationships, and teaching-research-service balance in ways that are consistent with its mission.

Standards of Quality

Standards of quality then can be established within a more meaningful context. How quality is to be defined must still be addressed. Characteristics that might be used to measure and define an institution's quality include a range of criteria from effectiveness of the educational program to healthy attitudes and self-perceptions among faculty and staff (Topor, 1986). Any measure of quality in higher education should include classroom assessment. It should also consider the health service nurse who visits a sick student, the president who sits at a dining hall table with a group of students, and the secretary who tracks down a reliable answer to a visitor's question, among others. These are important dimensions of quality.

Whether colleges and students are considered to be performing at poor, good, or excellent levels is important. Part of the rating is dependent upon what the public expects to be taught and learned. Edgerton (1986) offers the following analogy of state governments pressing campuses to live up to minimum expectations: It is similar to what happened when the American public became disenchanted with the automobile industry for turning out cars with defective brakes and rattling doors. Examples from higher education might include those of students who take out guaranteed loans but do not show up for classes, athletes who do not pass their courses, and graduates who cannot write clear sentences. In these cases, quality would be defined as a product that is absent of obvious defects.

The difficulty comes when higher and broader standards are desired. Then objectives that are most important need to be clarified and articulated. In terms of student performance, for example, are college graduates satisfactory who have acquired enough specialized knowledge to get hired for a professional, technical, or managerial job? Or, are not graduates more desirable and beneficial who have the drive and abilities to remake their jobs and work overtime or who can take on the problems of their communities?

Considerations of quality, until recently, have focused on leadership responsibility and employee motivation. Even well-designed defective-free products and services can fail if they do not fit consumers' perceptions of high quality. Johnson (1987) quotes Edson Williams of Ford Motor Company: "We must always believe the customer is in the center of all that we do, and it's not so much more complicated than that" (p. 25). He uses this quote to make the point that this attitude should be the quintessence of higher education. Deming would agree with this viewpoint as the golden rule of how constituencies are to be treated.

Student satisfaction is at the core of effective recruitment and retention strategies. An investigation of students' perceptions of quality and service requires careful listening as well as basic research and should include not only enrolled students but prospective students, non-persisting students, alumni, and the community as well. The findings then should be considered within the context of institutional goals and values.

Executive Job-hopping

While reasonable and obvious applications of Deming's philosophy exist, so do barriers and limitations. Perhaps they are not insurmountable, however, if carefully considered. The issue of executive job-hopping is one such apparent conflict. Believed by Deming to be a hindrance to quality in American businesses, it is a commonplace occurrence within higher education. At one university, simultaneous searches for six senior positions were conducted ("Colleges Cope," 1988). This situation was not considered to be unusual, but such a rapid turnover may work against the executive stability necessary for consistent and trustworthy leadership. From a different perspective, rapid turnover does bring fresh ideas and new viewpoints which may be more valuable in motivating and challenging faculty and staff. In terms of their effectiveness, the more critical factors may be a genuine commitment to the advancement of knowledge and the development of human resources. If these common values are held by the leaders of colleges and universities, job hopping may not produce the negative consequences that are seen by Deming.

College President's Role

Unless the role of the college president is redefined, the issue of management transformation is even more complicated in higher education than it is in business. Birnbaum ("Birmbaum On College Presidents" 1988) wrote that presidents are expected to provide leadership, coherence, and progress in an organization with conflicting authority structures, multiple social systems, and contested goals. Furthermore, their decisions are not necessarily the final word, and environmental changes may dilute presidential mandates. Because there has been a collective inability of leadership in American higher education to fashion and to communicate a credible vision of quality, the issue has been usurped from collegiate leadership by governors and legislators whose versions of quality—accountability strategies called assessment—may be imposed on them (Marchese, 1989).

Sets of expectations about what higher education should deliver often are formulated by those outside the academy; consequently, quality has become a political term— a code word whose meanings and implications depend on who is using it. For example, the academician's definition of quality may come from the accrual of prestige within the academy, while state leaders may be unimpressed by this measure of quality and want concrete service to the state. From the political perspective, quality values may be associated with such state policies as assessment, core curricula, selective admissions, and merit scholarship (Mingle, 1989).

Equality and Access

The question of appropriate treatment of equal opportunity and choice in higher education for all qualified citizens is related to the quality and equity issue. The world's most productive and responsive educational system that provides both quality and equality for all is the ideal (Boyer, 1988).

Equality should not be equated simplistically with access, that is, with the availability of any kind of higher education opportunity; rather, the quality of the opportunity needs to be taken into account. Astin's talent development view of excellence represents one way out of this dilemma; it advocates equal education for all students and does not favor the well-prepared student over the under-prepared student (1985). This view of excellence contends that quality lies in the institution's ability to affect its students and faculty favorably, to enhance their intellectual and scholarly development, and to make a positive difference in their lives. Since the conflict seems to derive primarily from traditional concepts, by using a talent development view, progress can be made toward the simultaneous achievement of educational equity and quality.

Barriers to Institutional Excellence

As previously mentioned, whether the institution is tightly or loosely coupled also has ramifications for applying Deming's methodology. Although loose coupling may allow for more decision making at the local level, it makes dissemination of good ideas throughout the institution more problematic. In addition to making it difficult to modify or change subsystems, use of administrative processes to effect change is more difficult within loosely coupled institutions (Birnbaum, 1988). Since most institutions are composed of subsystems which are both tightly and loosely coupled to each other, to the institution, and to the environment, the establishment of quality as an organizational reality presents an interesting challenge.

Aside from external and internal forces that may create barriers to pursuing institutional excellence and quality, Miller (1985) would argue that self-improvement is the best deterrent to excessive influence from external forces and the best catalyst for charting one's own destiny. Common standards of quality promoted in many institutions include raising SAT scores, counting faculty articles in recognized journals, and having administrators resolve problems as they arise. These approaches, however, are not particularly conducive to assessment aimed at improvement. An overall quality-improvement strategy within the institution is necessary to apply point two of Deming's method effectively. This strategy involves the entire organization and acknowledges the need for continuous improvement over a long period of time. When applied to the workplace, "kaisen" is the Japanese term for "continuing improvement involving everyone—managers and workers alike" (Holpp, 1989). This cultural value may be the one underlying factor responsible for the success of the Japanese quality movement—one not firmly entrenched in

American business culture. But it should indeed be an integral part of cultural transformations within higher education.

CONCLUSIONS

If institutions of higher education are to consider adopting Deming's "religion" of quality, a fundamental transformation within each college and university needs to occur, with management leading the way. Leadership for change is the essence of Point Two. To incorporate into higher education, Point Two of Deming's methodology, the industry as a whole would be the context within which the transformation would need to take place. The great diversity and individualistic nature of American higher education presents a problem at the macro-level.

How quality is defined and measured is critical to the effective application of Deming's philosophy outlined in his second point. Traditional assumptions about quality may work against progressive educational goals and influence institutional values and priorities in ways that interfere with efforts to improve higher education.

Deming would probably accept Astin's view of excellence that focuses on the development of students' talents and abilities. A college or university whose primary measure of quality is talent development would be compatible with Deming's philosophical framework. In addition to the entire academic community being united in working toward common goals, students would be in an environment where the values of education and of serving others took precedence over the values of acquiring resources and improving status. This milieu means that teaching and advising would be accorded higher priorities, and assessment and evaluations would be used for educational purposes to provide feedback to both faculty and students rather than primarily for personnel decision-making in the case of faculty.

If the appropriate structures and processes have been set in place by senior management, faculty and staff would be more receptive to higher standards. When Deming's quality philosophy has been realized, faculty and staff commitment should be heightened by support of the leadership but not dependent on it. In time, they may also develop an innovative mindset. Horizons of what is possible in terms of initiative would broaden as faculty and staff become adept at proposing ideas and suggesting alternatives to entrenched customs and practices.

Quality improvement takes time. What is needed is a long-term commitment. Besides the "raw material" that arrives on campuses to grow and to be educated, colleges and universities need to work more closely with schools to improve thier students' performances. Educating

and training the workforce, developing accurate and responsive quality information systems, and establishing goals for quality improvement at all levels will also be necessary for higher education to realize Deming's second point. Demonstrating interest and commitment at the very highest levels of management, however, is the number one requisite. Dedication to substance over superficiality and to purpose over power are perspectives to be embraced as colleges and universities consider Deming's model for adaptation.

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4

Point Three: Cease Dependence on Mass Inspection

By Samuel C. Heady

Deming's Third Point is best understood in the context of quality. "Routine 100 percent inspection to improve quality is equivalent to planning for defects, acknowledgement that the process has not the capability required for the specifications" (Deming, 1986, p. 28). Inspections, data gathering, and assessment measures are not the problem. For Deming, the problem is reliance on mass inspection for quality control (Katz, 1988). Mass inspection is an attempt "to try to insure quality by discarding or reworking the defective ones" (Mainstone & Levi, 1987, p. 16). Deming challenges management to eliminate the process of quality control through mass inspection. He believes managers must strive for quality by improvement of the production process (Gabor, 1988). Further, he emphasizes that quality is more than just having customers who are satisfied with a given produce or service. Quality is that state of affairs that engenders "loyal customers, the customer that comes back, waits in line, and brings a friend with him" (Deming, 1989, p. 4).

TWO MAJOR COMPONENTS

Point Three of the Deming Management Method consists of two components—elimination of mass inspection and achievement of high quality by building it into the produce or the service. Like the other 13 points, Point Three is simply stated.

Deficiencies of Mass Inspection

Deming is critical of mass inspection because it is "wasteful, unreliable, and it does nothing to improve the process" (Mainstone & Levi, 1987, p. 16). He cites a number of problems associated with mass inspection. The quality of a produce or service is already built in when the product is completed or the service is provided. Inspection at the end of the process is too late to affect quality. Another criticism is that low quality means higher costs; items that are scrapped or downgraded have to be paid for by somebody. Deming described a company in which the manager figured 21 percent of his payroll was devoted to correcting defects. Further, Deming claims "from 15 percent to 40 percent of the manufacturer's costs of almost any American product that you buy today is for waste embedded in it..." (Deming, 1981, p. 15).

Often those employees who are responsible for inspection are not able to separate accurately the good products from the bad. Due to substandard raw materials, lack of training, boredom, and fatigue, inspectors are unable to guarantee that 100 percent of products or services delivered will be of acceptable quality. The fact that instrumentation utilized in the mass inspection process can be costly and requires maintenance is another Deming criticism. These test instruments are often used as a scapegoat by inspectors who claim the tests are unreliable. And, finally, mass inspection at intervals during the production process is also ineffective. Identifying a defect in an item prior to its completion only leads to rework. Such inspections do not identify what caused the defect (Katz, 1988).

Building in Quality

How does one build quality into a product or service if not through mass inspection? Point Three addresses two concepts related to this process—statistical control and focus on the system.

Statistical Control

Deming said of Point Three in 1981: "Require statistical evidence of process control along with incoming critical parts," and stated that such control "provides the only way for the supplier to build quality in and the only way to provide the purchaser evidence of uniform repeatable quality and cost of production" (p. 18). He believes that decisions based on accurate and appropriate data is the initial step in quality control and that such data "are essential to the transformation of American business. Only with the proper use of statistical methods can people minimize confusion in the presence of variation" (Walton, 1986, p. 96).

Deming believes that most useful statistical tools enable supervisors and workers to identify problems and, in some cases, solutions (Mainstone & Levi, 1987). Most of these statistical processes "are neither difficult nor complicated to master. The level of mathematics is no more than a seventh or eighth grader might learn" (Walton, 1986, p. 97).

Focus on the System

Deming's experiment with the red and white beads underscores the concept that worker performance is a function of the system of production rather than the morale, attitudes, or competence of the workers themselves. Monkman wrote:

> *It's not quality that's (causing the morale) problem; it's the depth of corporate change necessary to make better quality happen. More than 85 percent of all quality problems stem not from variation caused by individuals, but from the system for getting the job done. The challenge, then, is to change the system (Monkman, 1989, p. E5).*

This focus on system improvement relates to statistical control. Through managerial, supervisory, and worker involvement in statistical gathering and interpretation, system problems can be identified and corrective actions taken (Gabor, 1988).

There are exceptions to point three: Deming believes that when an organization has gone through upgrading, 100 percent inspection may be necessary in certain situations, such as where public safety or health is affected (Walton, 1986); where 100 percent adherence to standards is necessary such as in banking (Deming, 1986); or where manufacture of some sub-standard components is inevitable such as with complicated electronic circuitry (Deming, 1986).

RELEVANCE TO POSTSECONDARY EDUCATION

Deming believes that "transformation is required in government, industry, education" (Deming, 1989, p. 14). Within the context of higher education, students can be viewed as incoming human resources supplied by the grades K-12 school system, the higher education experience as the production process, and society-at-large as the consumer. Some members of the higher education community may believe "it is inappropriate to draw parallels between business and the world of education" (Herr & Johnson, 1989, p. 23), while others see some common elements. Three points of congruence between Deming's point three and higher education can be identified.

Focus on Systemic Change

The Deming Management Method addresses the concept of a system from two perspectives. First, Deming believes a system must be complete. In the manufacturing context, the system would include suppliers, incoming materials, consumers, and support functions such as research and development (Scherkenbach, 1988). To ignore or leave out an important component—customers, for example—is to reduce the effectiveness of the enterprise. And second, the process of building in quality involves an examination and improvement of the system's components. As mentioned earlier, quality is more a function of the system than a result of individual worker inputs. Deming's emphasis on systemic change is a theme that is advocated by education reformers if not by education policy-makers.

Hodgkinson (1985) has been an outspoken proponent of developing education systems that take into account all levels of activity from kindergarten through graduate programs. He writes that "almost everyone who works in education perceives it as a set of discrete institutions working in isolation from each other" and that there are few linkages between and among these separate entities (Hodgkinson, 1985, p. 1). While such an arrangement hardly qualifies the American educational milieu as a complete system, a growing number of writers are advocating the systemic approach (Goodlad, 1984; Parnell, 1985; Huebner, 1979; and Conrad & Pratt, 1985). Reform recommendations are focusing on teacher training, decision-making processes, curriculum, instructional methodologies, collaborative relationships between educational institutions and business and industry, and environmental systems design.

Problems with Mass Inspection/testing

There are continuing pressures at the state level across the nation to implement mandated testing programs at the senior year as a means of evaluating students and holding school districts accountable for the results. These testing programs and other reform efforts, such as increased graduation requirements, are forms of mass inspections and, as Deming would forecast, may have little effect on school improvement. The jury is out, but a critical national need for greater numbers of high school graduates who possess the skills required to function in today's society is the driving force.

The desirability of mass inspection continues as a strong element in current educational reform movements. The *Workforce 2000* report published by the Hudson Institute asserts that "the educational standards that have been established in the nation's schools must be raised dramatically. Put simply, students must go to school longer, study more, and pass more difficult tests covering more advanced subject matter" (Johnston, 1987, p. 117).

While mass inspection in American education takes place primarily at the secondary school level, higher education is affected also. Evaluations can have significant bearing on admission of students. And, by focusing on mass inspection, public schools fail to deal with those systemic changes which will enhance the quality of those students who will enter higher education.

The Processes of Assessment

Miller (1985) wrote that the "overall purpose of institutional appraisal should be to improve the academic enterprise" (p. 4). This perspective on assessment has a direct correlation with Deming's emphasis on continuous statistical process control as the primary means of quality assurance (Deming, 1981). In a series of interviews conducted at five very different institutions, Hutchings and Reuben found that professors believe "assessment will be less a matter of instruments or criteria or norms or state guidelines than a mindset" (1988, p. 55). O'Brien of King's College reflects a Deming-like attitude toward assessment. She notes that standardized test scores are not likely to contribute substantially to student learning or to instructional improvement; feedback that does contribute to quality education "has to be gradual, in multiple contexts, related to where the person is at the time, on-going" (Hutchings & Reuben, 1988, p. 55).

Wandzilak and Mortensen have proposed a seven-step model for "using observational and student learning data as feedback" to enhance instructional quality (1988, p. 114). The model provides for continuous student assessment and feedback, teacher assessment, problem identification, and instructional improvement.

Limitations in Higher Education

There are four major limitations in the application of Deming's point three to higher education. It is one thing to apply statistical process controls to the manufacture of an automobile or the operation of a hotel; it is quite another to apply those processes to the education of a complex human being. As technologically sophisticated as are modern manufacturing processes, they pale in comparison with the intricacies of the learning process. Secondly, Deming (1986) emphasizes the importance of factual, objective data in statistical process control and rejects subjective inputs. Effective assessment of higher education involves utilization of both objective and subjective data (Miller, 1985).

Business and industry can consciously choose to cease dependence on mass inspection; however, institutions of higher education may not be able to make such a decision unilaterally. State legislative bodies can and do mandate mass inspection-type assessment procedures in the interests of accountability, and accrediting agencies also have a heavy influence. The state of Ohio recently adopted legislation (Senate Bill 140) which mandates sweeping education reform measures. Some provisions focus on systemic change, such as increased emphasis on early childhood education, while others require schools to engage in comprehensive student testing programs. Educational institutions simply are not in a position to reject many of these elements. Over a longer period of time, however, schools can effect changes if they use the legislative and political processes.

Fourthly, Deming believes that quality is both uniform and repeatable; it is achieved by implementing appropriate statistical process control and continual reduction of variability (Deming, 1989). Quality can be defined in the context of higher education but it is "elusive...the initial design consideration regarding quality is recognizing the perpetual and individual nature of the process" (Conrad & Pratt, 1985, p. 602). It is much easier to determine the quality of an appliance than it is to evaluate the quality of an arts and sciences graduate.

CONCLUSIONS

Point Three of the Deming Management Method challenges managers in business, industry, government, and education to cease their dependence on mass inspection as a means of quality control. Deming believes mass inspection is costly, ineffective, and ill-timed. Quality, he asserts, must be built-in during the course of the production process through statistical process controls.

Deming's third point is applicable to higher education in terms of its emphasis on systemic change, common problems associated with mass inspection, and assessment procedures utilized in system improvements. There are limitations as well. These limitations are due to the nature of higher education and the relationship between postsecondary institutions and legislative and governing bodies.

Collegiate leaders who are interested in applying Deming's third principle to their institutions could consider the following initiatives:

1. Establishment of collaborative relationships with area elementary and secondary schools and with business and industry.

Such relationships may facilitate the evolution of a true educational system (pre-school through higher education and continuing education).

2. Evaluation of assessment practices to determine if they are comprehensive in scope. These practices should be geared toward institutional improvement and should be of sufficient validity and reliability to gather information that will be useful in improvement initiatives.

3. Given the reality of some mass inspections in higher education, coordination of these assessment practices with the institution's overall assessment program can result in the whole being greater than the sum of the parts.

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5

Point Four: End the Practice of Awarding Business on Price Tag Alone

By Terrence J. Hogan

The current practice of American business is to purchase goods or services from suppliers on the basis of the lowest bidder. Manufacturers apply the practice in purchasing raw materials, manufactured subassemblies, and supplies; wholesalers and distributors employ it in stocking finished products for re-sale; and other business entities employ the practice relative to products consumed.

The practice of awarding business based on low bid developed to promote competition and to keep prices down. According to Deming, however, the long-term effect of this practice on the health of business is negative. Because of its impact on quality, the practice actually leads to higher costs, lower reliability, and, perhaps, the ultimate failing of a given enterprise (Deming, 1986). The perception of these negative effects has led Deming to identify as his Point Four: "End the practice of awarding business on price tag alone" (Deming, 1986, p. 31).

AWARDING BUSINESS ON BASIS OF PRICE TAG ALONE

The practice of purchasing through a system of low bid is short sighted and ultimately expensive, according to Deming; and there are five major drawbacks to this traditional system: (1) It focuses on perceived short term unit costs rather than true long term total costs; (2) it causes buyers to switch from vendor to vendor, adding to variation in supplies which, in turn, decreases quality; (3) it causes an excessive reliance on specifications because many vendors have to supply the same product, which, in turn, serves as a barrier to continuous improvement; (4) it leads to a proliferation of suppliers and therefore multiplies the problems that are part of any supplier relationship; and (5) it drives suppliers of high quality products out of business (Walton, 1986).

Short-term vs.Long-term Costs

Deming emphasizes that "price has no meaning without a measure of the quality being purchased" (Deming, 1981, p. 18). Low cost is often the result of low quality and purchasing based on low bids thus introduces cheap materials into the production process. This contamination affects the quality of the final product and ultimately results in higher costs. Higher costs are incurred through the allocation of resources to reworking raw materials or supplies to suit needs, inspection throughout the manufacturing process, reworking products throughout the manufacturing process, production delays due to need to inspect and rework, and warranty service. These costs, when added to the original cost of the raw material or supply, equals the true cost incurred.

A final product that is perceived by its consumer as lacking in quality can clearly impact the long-term health of the manufacturer or supplier of that product. Low quality products cause companies to lose customers which, in turn, adds to marketing costs. If undetected over time, this problem can put a company out of business. Deming does not suggest that cost is unimportant; rather, he points out that the cost of supplies or materials needs to be viewed in terms of their true long-term total cost to the company rather than their perceived immediate unit cost to a department (Deming, 1986).

Variation in Supplies

Variation in supplies and raw materials is costly to the user. Even though two suppliers send materials of equally high quality, there will still be variation between the two, which can be costly because it requires time for the manufacturer to adjust to the change. The amount of time required varies depending upon the situation, but in any case the costs of variation can be significant.

Reliance on Specifications

Current purchasing practices require specifications developed by the buyer to be matched by the supplier. Purchasing agents buy the product offered at the lowest price only if it meets these specifications. This approach can create several problems: (a) Specifications are not adequate to ensure consistency, meaning that two items can meet a given set of specifications yet only one of them is usable by a manufacturer; (b) specifications that are met by a supplier without an understanding of how the material will be used can result in unusable supplies; and (c) specifications can set a standard for the entire manufacturing process that rewards suppliers for meeting a minimum requirement. They can effectively eliminate the opportunity for improvement in quality because they set a minimum standard which also becomes the maximum (Deming, 1986).

Proliferation of Suppliers

Maintaining an effective and productive working relationship with a supplier can be time-consuming and expensive for a manufacturer and, ultimately, the consumer. Communication is costly when more suppliers are involved. In addition, the variation in supplies and the reliance on specifications increase. The greatest impact of the proliferation of suppliers, however, is in the process of developing new products. Deming observes that "to work with a single supplier on development of an item demands so much talent and manpower that it is unthinkable that one could go through the development with two suppliers" (Walton, 1986, p. 63).

Diminished Availability of Quality Supplies

Low bid purchasing can drive quality suppliers out of business or out of competition as well as lower the overall standards of production within a given field or product line. Those suppliers who produce a quality product and need to charge a fair price for it may find themselves submitting noncompetitive bids. Deming writes that "low balling" to gain a bid is a common tactic used by suppliers to get contracts, and that this practice inevitably results in overall higher costs for the buyer. Suppliers make up the difference by overcharging for specification changes, shortcutting on service, or providing materials that may meet technical specifications but are of lower quality (Walton, 1986).

An Alternative to the Low Bid System

Deming asserts that the problem of poor quality in supplies is a result of the practice of awarding business on price tag alone. As is reiterated throughout the entire Deming management system, improving this system requires management to change the process. Deming believes that the "best solution to improvement of incoming materials is to make a partner of every vendor, and to work together with him on a long-term relationship of loyalty and trust" (Deming, 1986, p. 43).

A long-term relationship with a single supplier offers some distinct advantages over a short-term relationship with the "lowest bidder." The beginning of a long-term relationship is characterized by extensive dialogue, which is not practical in a one-time or short-term sale. Dialogue can lead to a loyal and trusting relationship in which buyers and suppliers are able to spend time getting to know each other's businesses, assessing each other's needs, and developing cost-effective solutions to each other's problems.

If it can be developed, a long-term relationship characterized by mutual respect and on-going dialogue provides the buyer with many specific benefits: (a) The buyer commands the attention of the supplier and does not compete with a multitude of other buyers when special needs arise; (b) the supplier can afford to invest in producing quality products because of the long-term nature of the relationship with the buyer; (c) the buyer will enjoy a consistency and quality of supply that have cost benefits to the buyer; (d) future product needs can be designed by teams representing buyer and supplier and thus fulfill more exactly the needs of the buyer; (e) suppliers and buyers are better able to coordinate delivery of exact quantities of materials; and (f) both parties benefit from continuously improving quality and productivity that result in long-term cost reductions and staying in business (Deming, 1986).

RELEVANCE TO HIGHER EDUCATION

The Deming Management System has applications in the field of higher education. Deming asserts that his method applies to service organizations, including education, noting that "inefficiency in a service organization, just as in manufacturing, raises prices to the consumer and lowers his standard of living" (Deming, 1986, p. 183). Relative to the application of his method to public institutions, Deming contends that "a governmental agency should economically deliver the service prescribed by law or regulation. The aim should be distinction in service. Continual improvement in government service would earn appreciation of the American public and would create more jobs in the service, and help industry to create more jobs" (Deming, 1986, p. 6).

Though Deming has applications to the purchasing processes that are essential aspects of all colleges and universities, the more critical application is to the process of selection of new students. In this context, the analogy may be made of high school graduates as the raw material and educated citizens as the product of higher education. The quality of academic skills of high school graduates is being judged to be considerably deficient relative to future societal needs. Standardized test scores have declined and college faculty generally believe that freshmen have failed to master the range of basic skills that are necessary to perform successfully at the college level (O'Keefe, 1984). A Carnegie Foundation study of faculty attitudes indicated that 75 percent viewed undergraduates as "seriously underprepared" (Mooney, 1989, p. A18). Because colleges rely on a steady supply of suitable high school graduates to provide efficiency in the production of educated citizens, these shortcomings are particularly ominous for the nation's future.

The first reaction to this problem often is for colleges to blame the secondary schools and to demand that the secondary school, as the supplier in this case, improve its "production" process. If the supplier is not able to produce improved quality in the raw material, the manufacturer recruits elsewhere (switches vendors), raises admission standards (alters the specifications), or undertakes programs of remediation (reworks the raw material). Each of these responses is costly and none substantively addresses the inadequate intellectual quality coming into postsecondary education. The results are overall higher costs for colleges which can affect their long-term financial health (threatening their ability to "stay in business"), and diminution in the overall quality of college graduates.

Awarding Business on Price Tag Alone

Several of the drawbacks to the practice of awarding business on price tag alone have direct application to higher education. Short-term vs. long-term costs is one such practice. The total long-term cost of educating underprepared young people includes the costs of remediation and attrition, additional support services and marketing, and the less quantifiable costs to the institution of producing a product of perceived low quality. In the overall public education system, we need also to ascertain the long-term cost to society of inadequate education. This cost can include the financial impact of unemployment, the impact of an unskilled workforce on economic competitiveness, and the costs of additional social services.

The failure of higher education to act based on total system costs is not surprising given the realities of our educational system. Hechinger (1984) describes it as "a collection of disjointed parts that in the main fail to connect. It's like a play with a succession of scenes and acts, each written by a different playwright and staged by a different director. Now, within that kind of play or system, some good things do occur in some of the segments. But they don't add up to a satisfying whole" (p. 70).

Given this compartmentalization, colleges tend to approach the problem by identifying policies and programs for working with students once they arrive on the campus rather than earlier. Some studies indicate that close to 40 percent of students entering college require remedial education. As a result, tremendous effort and resources go into developing remediation programs. California is currently spending $82 million annually and Texas finds its yearly expenditure of $18 million is inadequate. These efforts, though important, address the consequences rather than the sources of the problem (Reilly & Cashen, 1988). Hechinger (1984) called it a focus on "detection vs. prevention" and in fact uses a Japanese versus American manufacturing analogy to describe it: "[I] asked the Japanese manager what he thought was the difference in quality control in the United States and in Japan....[He responded that] the United States tries to control quality by detection, and [the Japanese] try to control it by prevention. I think being a little less polite he would have said, we try to make things work the first time around" (p. 71).

A second drawback to awarding business on the basis of low bid alone that has particular application to higher education is the diminished availability of quality supplies. Switching vendors, changing specifications, and reworking raw materials do not increase the availability of quality supplies but simply reapportion them among the seekers of the raw material. The manufacturers find it increasingly difficult to find raw materials (students) of sufficient quality to suit their needs. Those who do, do so at a greater expense and at the expense of their peer institutions. Though current college enrollments continue to rise, even admissions officers have begun to question this approach. According to Forte (Evangelauf, 1989), although colleges are spending more and more money on recruiting, they are generally drawing upon the same pool of seniors from good high schools. "We're expending these extraordinary resources on behalf of our own institutions, but are we serving the public good" (p. A30)?

The reliance on specifications can be a third drawback that is particularly applicable to higher education. Admission requirements and articulation agreements constitute the specifications used in bringing high school graduates into higher education. The Deming view that specifications do not ensure consistency is apparent when we consider the disparate levels of preparation that will allow different students admission to the same program or institution within the higher education system. The college preparation process is founded upon specifications that in no way ensure consistency of preparation. As O'Keefe (1984) notes "course requirements are usually stated as the number of Carnegie Units to be completed in specific subjects. No further delineation of the substantive content of those courses is given by most colleges. Unfortunately, the Carnegie Unit is a measure of time spent, and has come to have little to do with the actual content to which the student has been exposed or with his or her mastery of that content" (p. 62). Given this lack of attention to course content, students meeting the same specifications relative to college preparatory coursework requirements can present the admitting college with different sets of educational needs.

When colleges admit students based upon specified course requirements, they also assume that the students will be capable of achieving success. This expectation has not been realized in many cases. As Adelman (1984) pointed out, "we prefer to be actuarial, not substantive. We ask about scores on tests, not the content of the tests; we ask about the grade point averages and conveniently neglect their debasement as measure of performance; we ask about numbers of courses in various areas, not the standards of content that lie behind the course titles" (p. 8).

Specifications employed in the admission process reward students for meeting minimum standards. Pressure to maintain a high grade point average often causes college-bound high school students to take the easiest courses that will still meet the college admission course requirements. This pattern leads to students avoiding advanced coursework that would more substantively assist them in preparing for college (O'Keefe, 1984).

In general, the reliance of specification is a result of having an "arm's length" relationship with those who supply the producer versus having what Deming proposes, which is an "arms around" relationship (Deming, 1986, p. 47). His suggestion to "make a partner of every vendor, and to work together with him on a long-term relationship of loyalty and trust" (Deming, 1986, p. 43) has relevance to higher education.

Deming would likely believe that the application of his Point Four to the process of college student admission could improve the quality of college graduates and have positive impact for high schools, colleges and universities, employers, communities, and society as a whole. The effective application of Deming requires that the higher education community recognize that its long-term health is inextricably tied to the success of both elementary and secondary schools, and therefore it is in higher education's best interests to commit to long-term relationships that revolve around improving the quality of the overall educational experience. Given this, higher education should provide assistance to secondary schools and work cooperatively to improve the quality of their output, and postsecondary and secondary schools should communicate extensively and educate each other about their needs, goals, impediments, and production processes.

There are many examples of the positive impact of mutually supportive relationships between the two educational sectors. Model programs have been identified and reported (Bandy, 1985; Jaschik, 1986; Wilbur, 1984); national conferences have been held on the topic (Thompson, 1984); publications have been devoted to it (Daly, 1985; Gaudiani & Burnett, 1985); and national and state reports have called for it (Ohio Board of Regents, 1981; Maeroff, 1983; Watkins, 1983). The application of Deming's Point Four to higher education confirms, from a somewhat different perspective, the validity of initiatives already underway.

Ineffective Applications to Higher Education

When considering the problems involved in applying Deming's Point Four to higher education, the ideals to which educators aspire conflict with the reality of a complex set of structures and systems. The inability of institutions to reach consensus on systemic changes can be so persistent that any analysis must take into consideration the durability of the status quo and the likelihood of assembling a critical mass to change it.

Several specific impediments to applying Deming's Point Four to higher education are: (a) The nature of the product of higher education; (b) the manner in which institutional purposes are defined; (c) the degree of management control within these organizations; and (d) the inherently public nature of the overall postsecondary education system.

The product of higher education is as complex as human life itself. Unlike the results of a manufacturing process, an educated person is ultimately not quantifiable. Even if we move beyond specifications, it is questionable if we will ever get to a point where we can thoroughly define what constitutes adequate preparation for college and assure it in high school students.

The organization of higher education as a system, and particularly the degree of management control, argue against the likelihood of Deming's method being implementable on a massive scale. Institutions of higher learning tend to have purposes that are much less focused than those in the business world. They are generally described as teaching, research, and service, though colleges often have a difficult time identifying for themselves the relative importance of each component. In addition, the degree of management control is much different than in business. A fundamental principle of Deming's is that management controls the systems of production and therefore must take responsibility for changing them as needed (Deming, 1981).

In educational systems, power more often is shared among governing boards, legislatures, political leaders, collegiate chief executive officers, influential citizens/alumni, senior collegiate administrators, faculty, and students so that no one group is able to direct change. Birnbaum (1988) describes four models of organizational functioning in modern American higher education: collegial, bureaucratic, political, and anarchical. Even in the model with the most management control, the bureaucratic, the amount of power vested in management is far less than what is found in most business settings. The lack of a focused purpose and the lack of management control make it difficult to marshal resources necessary to redefine processes of student intake and relationships with secondary school systems.

The decentralized structure of American education also argues against the application of Deming's Point Four to higher education. Central to point four is the notion of establishing an effective, mutually beneficial relationship with a single supplier of a given product. This point conflicts both philosophically and operationally with the American approach to higher education. Besides the obvious operational problem (there are many more secondary schools than there are colleges and universities), there is a philosophical question of access. Ideally, our system of postsecondary education consists of a range of options that, in total, fulfills our educational needs. Implicit in this structure is the specialization of purpose by type of institution. Community colleges, technical colleges, liberal arts colleges, research universities, vocational schools, and comprehensive universities each fill an educational niche. Added to this pattern is a tradition of institutional autonomy that has resulted in unique combinations of programs within types. If given colleges restricted access to students from a particular secondary school or system, access to the range of options would be curtailed.

CONCLUSIONS

Ending the practice of awarding business on price tag alone is an idea that can be meaningful in higher education. Though there are limits given the nature of the product and organization in higher education, the relative degrees of management control and government regulation, and the decentralized nature of the overall system, the benefits have considerable potential. The adoption of this point would suggest we act and plan based on true long-term costs rather than perceived short-term costs; that we develop "arms around" relationships with secondary schools so as to improve quality of students; and that we base our knowledge of students not on specifications that have little meaning but rather on direct, interdependent contact with secondary school systems.

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6

Point Five: Improve the System of Production and Service

By Dawn G. Hughes

Deming emphasizes management's obligation to continuously improve, stating: "Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease cost" (1986, p. 23). In addition, all persons and departments must participate in the quest for improved quality and productivity, although management has the obligation of providing the leadership and example.

IMPORTANCE OF QUALITY

Deming (1986) stresses the importance of quality in the successful operation of any organization, indicating that in order to improve quality and productivity, successful organizations first need to improve production and service. In order to do this, the administrators of the organization need to have a thorough understanding of the way the system operates.

Deming also believes that quality begins at the design stage and is affected by the raw materials that input into the process (Deming, 1981-1982). After plans have been put into action it may be too late to assure quality (Deming, 1986). Everyone in the system must constantly work to improve it, especially those in the top level of management (Deming, 1981-1982; Greenwood, 1988). To make these improvements, it is also necessary to understand better the needs of the consumer (Deming's way..., 1988).

One of the major reasons for continuous improvement is to reduce the variability of the product (Scherkenbach, 1988). If this is done, then the customer will be better satisfied with the quality of the product and continue to patronize the producer.

IMPROVEMENT OF THE SYSTEM VERSUS PROBLEM SOLVING

Improvement of the system of production and service should not be equated with problem solving, which Deming equates with "putting out a fire" (Walton, 1986, p. 66). An awards ceremony at a pharmaceutical firm is used as an example: Two employees received awards at that ceremony for their responses to separate incidents. The first had noticed a shipment of vaccine in which through a manufacturing error no labels had been applied to the bottles. Due to his timely intervention, it was possible to identify the vaccine and save the company the costs of discarding it. The second man had discovered a contaminated shipment of drugs prior to the time that it was to have left the company, allowing it to be condemned prior to being released to the consumers.

In these two examples, the actions of the employees did nothing to improve the quality of the firm's products or services; in fact, the same types of problems could very well occur again unless some preventative measures were taken. Deming points out that just setting up specifications is not sufficient to improve quality, and may actually lead to stagnation or the maintenance of the status quo. Rather than setting a goal of "zero defects" or of meeting the competition, the company which continuously strives to improve must consider the process or method by which that improvement can be achieved (Neuhauser, 1988; Walton, 1986).

In addition, Deming (1986) believes that improvement of quality depends on continual work with vendors of the raw materials used. As a result, there should be an eventual reduction to one vendor, thus allowing for the best quality of raw materials being used to make the product. He notes that Americans worry about specifications, whereas the Japanese worry about uniformity.

To accomplish continuous improvement, Deming believes that the management must answer such questions as: (a) Is the firm doing better than a year ago, or two years ago; (b) is marketing more effective; (c) has customer satisfaction increased; and (d) has the pride and performance of the employees improved (Walton, 1986)? If the company supports the notion of continuous improvement of production and service, the answers to these questions should be "yes."

STRENGTHS OF DEMING'S FIFTH POINT

These strengths include his clear discrimination between what is and is not meant by improvement of the process. Also, his work with Japanese companies since the late 1940s and 1950s has demonstrated the way in which constant improvement can improve quality and decrease costs. When he first began his work with these companies, the "Made in Japan" label was essentially synonymous with inferior workmanship and materials. Now Japanese products have become so accepted and desired by consumers that trade restrictions have been imposed to protect American markets from being overrun by Japanese imports.

Deming stresses the importance of assuring quality in a product and service throughout the process. "Every product should be regarded as one of a kind; there is only one chance for optimum success" (Deming, 1986). His views emphasize the costs of wasted products and efforts. The idea of continuously improving the system of production and service may be universally accepted, but accomplishing this improvement is quite another thing. Deming cautions against making changes in the system without first determining the factors involved in reducing productivity and service. The process of identifying these factors, however, can be quite time consuming and expensive.

In organizations whose product is not easily identifiable or measurable, such as in various service professions, it is more difficult to determine if improvement has been made as a result of changes in the system. The process of using statistical control in such settings could also be perplexing. In addition, Deming stresses the importance of not trying to adjust the system if it is in statistical control (1986). This point would seem to be in conflict with the goal of continuous improvement.

Also, in some instances it is not possible to have complete control over the raw materials used in production. This circumstance is especially true when that product is service-related, as with health care or education. While Deming's goal of single vendor relationships for raw materials might improve the quality of those materials, limiting the source to just one vendor could create a severe problem in the event of such disasters as fires, hurricanes, and earthquakes which could cause a sudden halt to incoming materials.

RELEVANCE TO HIGHER EDUCATION

Is Deming's Management Method applicable to higher education? It is more difficult to recognize improvements in a setting that has no easily identifiable and measurable product. Harris and associates (1989) did apply Deming's points to the management of private career schools, identifying four ways in which Deming's mandate to improve the system of production and service could be applied in this educational environment: (1) Administrators of educational institutions should not attempt to fine tune the system when more fundamental changes are needed; (2) educational administrators need to learn in detail how various programs work, which allows one to identify and correct problems in the learning process; (3) improvement, however small, is always possible and desirable; and (4) it is only when statistical control is achieved that changes in the institution will improve the performance of students.

The Role of the Administrator

Collegiate administrators should provide leadership in assuring that all personnel in their departments and units remain abreast of current advances and practices in their fields. Some methods of accomplishing this improvement include the provision of staff development programs, the use of sabbatical leaves, and encouraging further education or research in their fields. These aspects can lead to better relationships with potential employers of the graduates if educators use their updating to disseminate current theories and knowledge to their students.

Administrators in educational institutions need to closely examine the processes within their departments and units to determine factors which may be causing decreases in the quality of products or services. Once identified, these factors should then be modified to improve the product or service. For example, if the college placement director found that a large number of the accounting graduates seeking employment were unable to locate positions, he or she might send a survey to firms in the area to determine what those potential employers identified as skills and qualities they required of their employees. In addition, the placement director might discuss the statistics with the dean or chairman of the department involved in order to discover some underlying reasons for the low placement rate. If these efforts uncover causes of the problem, such as lack of training in specific computer programs commonly used in the potential employment settings, then steps can be taken to correct this omission in the educational program.

It is important, however, to avoid capricious or poorly planned changes in educational programs. In the absence of a clearly defined problem or problems, change could cause decreases in the quality of service. For example, the director of the admissions department of a small private college might note that applications from a specific region of the state were lower than in previous years. As a result, he or she might choose to increase the number of personal contacts that the admissions counselors had with guidance counselors of high schools in that region. If the reason for the decrease in the number of applications was a decline in the number of high school graduates in the region, the change in policy could turn out to be a relatively expensive and ineffective intervention.

Impact of Faculty on the Process

Deming places the bulk of responsibility for improvement of productivity and service in the business world on top level management. In higher education, however, the faculty is very much involved in this process (Birnbaum, 1988). In fact, due in part to frequent changes in the upper levels of the collegiate hierarchy, the greater faculty stability may permit them to have significant influence over the degree and types of changes to be made in the institution.

Finkelstein (1984) wrote that the capacity for adaptability of the institution is critically dependent upon faculty participation. He cited four research studies which demonstrated that faculty participation in innovation could be predicted by determining their perceptions regarding participation in the change. For successful collegiate improvements, the faculty need to be involved in the process as well as perceive the need for and value of the proposed changes.

Identification and Measurement of the Educational "Product"

The products of higher education are much more difficult to identify and to measure than are the products of manufacturing firms. Indeed, much current debate exists on how to assess student outcomes in relation to educational programs. In addition, the products of higher education are usually defined differently by various individuals or factions associated with the institution. For example, the products of higher education may be seen by those in business as suitable graduates for employment. Others might define the product as advances in knowledge or practice resulting from research by the faculty.

Control of Raw Materials

The leadership in postsecondary institutions has less control over the raw materials used than do most manufacturers. Colleges and universities establish requirements for admission, such as specific prerequisite course work to be completed prior to entering the institution, yet they have little control over the quality or content of courses that are offered in the secondary schools. It is also unrealistic to expect institutions of higher education to reduce the "vendors" of their raw materials to a single supplier.

CONCLUSIONS

Higher education can, and should, implement some aspects of the Deming Management Method, but there are several areas of concern. Deming has shown how continuous improvement can benefit industry. It is possible that applying his methods to the realm of higher education can provide similar benefits to students, faculty, and administrators. For example, careful examination of currently existing programs of study might lead to the discovery of factors which prevent students from being able to enter some programs. In a nursing program, such factors could include not having completed the prerequisite course work or not having sufficient funds to pay the tuition. When the problems are identified, corrective steps could be taken. In the first case, a representative of the institution could work with school guidance counselors to ensure that they understand what prerequisite courses are required for admission to the nursing program. In the second instance, the institution might develop a collaborative relationship with a potential employer, such as a local hospital, to establish a work study project where students could earn tuition credits in exchange for work time.

The considerable autonomy of the faculty and the difficulties involved in defining and measuring the products of higher education require that some adaptations be made in implementing Deming's methods. The faculty or their appropriate representatives must be included in all aspects of the planned change. The results that are expected from the change need to be defined so that they can be measured, and what is being measured needs to be a valid indicator of the change. For example, a change can be made in the manner in which course material is presented, such as changing from straight lecture to a combination of lecture and computer-assisted instruction. To measure the direction and degree of change in student performance as a result of the change, final examination scores can be compared between students who took the traditional class and students who were enrolled in the new format class. It would be important to determine whether the combination of the methods led to changes in the performances of students, or whether the changes were related to some extraneous factors, such as the availability of computer terminals.

Improvement of a micro-system of higher education is an important goal, and it is possible if the system is defined in manageable terms. With some adaptations, Point Five in the Deming system can be useful toward this improvement.

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7

Point Six: Institute Training

By Linda L. Hunt

Stories of workers who learn their jobs from other workers or who are forced to depend on unintelligible printed materials are related frequently. Many times there is little or no training when a worker is faced with a new task or a new machine. As a result, workers do not know when they have done their jobs correctly. What is acceptable one day may not be acceptable the next day (Walton, 1986).

Deming maintains that quality is achieved as the process is improved. "Improvement of the process increases uniformity of product output, reduces mistakes, and reduces waste of manpower, machine-time, and materials" (Deming, 1981-82, p. 12). One technique Deming advocates that can help improve quality is training. It should be instituted on the job when a new technology or method is introduced or if the person is being trained in a different set of skills for a different task.

Point Six refers to the foundations of training for not only the management but also for new employees. More recently, training and retraining are addressed in the same point (Walton, 1986). Deming, however, views these concepts separately. This chapter will be limited to training, while retraining will be discussed in another chapter.

STATUS OF TRAINING IN THE U.S.

Training in the United States needs restructuring according to Deming (1986); worker training worker is no longer a preferred method. It is the responsibility of managers to determine how the workers will be trained and to establish the limits of acceptable work. Walton (1986) related a story that Deming told concerning what occurs when employees learn from each other. The training gets progressively worse, resembling the familiar parlor game in which a number of people sit in a circle, and someone whispers words to the next person who whispers them to another. By the time the words make the first circle, they are distorted beyond recognition. That process happens when worker trains worker.

Managers also are responsible for removing inhibitors to good work. Deming maintains that money and time for training will be wasted unless these inhibitors are removed. Harris and associates (1989) contend: "Training will have little or no effect, however well designed and delivered, if the system and circumstances in which the trainees work inhibit their doing what they have been trained to do. If on the other hand, the work environment reinforces the training, then training is a valuable investment, as much as the purchase of good equipment or physical space" (p. 12).

Deming believes that training should continue as long as performance is not yet in statistical control and there is something to be gained. The manager determines the standards of performance and determines the limits of acceptable behavior. When a manager concludes that a worker is functioning outside the boundaries of acceptable behavior, a plan of training in which management participates should be instituted.

STATISTICAL CONTROL

A process is said to be in statistical control, a concept proposed by Deming (1986), when the output is stable. Charting a worker's performance, according to Walton (1986), can be accomplished with the same type of control chart that is used to determine if a process is in statistical control. A control chart indicates whether and when a person has reached the state of statistical control, or when all special causes so far detected have been removed and the learning curve has leveled off. At this point the remaining variation must be left to chance unless new causes are identified and removed. When a new worker reaches the state of statistical control, continuation of training by the same method will accomplish nothing (Deming, 1986). The state of statistical control does not mean to do nothing; it means action should not be taken on the remaining "ups" and "downs," since it would create additional variation and more trouble.

If a worker produces a defective item, this flaw should be indicated on the control chart. The worker notes this shortcoming from the chart and removes the cause of the defect. Inherent in this concept is a basic principle that no one should be blamed or penalized for performances that the individual cannot control. Violation of this principle can lead to frustration and dissatisfaction with the job and can lower productivity. When work has been brought into a state of statistical control, the worker, whether well trained or not, is "in a rut," and training in that particular job is complete until new circumstances arise. The worker, however, may with additional training, learn to do another job well.

Using statistical control charts aid not only the manager but also the worker in determining levels of performance of each worker. It takes into account individual differences in education, skill preparation, and performance. Consistent with Deming's method, Wircenski and associates (1989) emphasize the importance of assessment of training requirements of the worker rather than mere assumption of those needs. The type and amount of training should be individualized.

ANALYSIS

Blomberg (1989) concurs with the Bass and Vaughan definition of training as those "...systematic means used by a business to instill new skills, knowledge, or attitudes in employees, thereby increasing the employee's worth and serviceability" (p. 89). He notes that specific training increases the value of the worker for the employer on one specific job and cites orientation as one specific example of training in which the new employee learns about the company. It should include assessment of the employee's skill and performance level in order to implement specific training related to the job.

Training and Quality

Training is considered an important factor in developing quality and productivity. When training is absent or inadequate, the worker does not know the expectations of the job and frequently does not even know how to do the job. The importance of quality has been emphasized throughout the writings of Deming. Torres and Bruxelles (1989) also believe that "...trainers contribute to creating model environments that foster self-direction, participation, and responsibility, and that result in increased quality and productivity" (p. 74).

Training is the responsibility of the training department as well as the first-line supervisor. Day (1988), however, maintains that assigning the new employee to one of the better workers can offer two advantages: Supervisors have limited time to devote to the training of new employees, and new employees find it more comfortable relating to peers rather than the supervisor. But he also recognizes that using current workers to train new employees provides no guarantee that a top performer will be a good teacher. Day writes that this circumstance should not discourage use of top workers to train new employees, but he adds that the first-line supervisor should initially function as the primary trainer. Involvement of management in the training of new employees is seen as essential by Deming.

Cost Benefits of Training

Bloomberg (1989) pointed out that training and orientation may have cost-benefits to the organization, and analysis of this possibility is an important management responsibility. Training is expected to provide a return on investment. Bloomberg (1989) wrote: "Executive seminars and tuition assisted college training for employees are examples of long-term investments in human capital" (p. 91). He also warns that if the compensation received by the employee does not reflect his or her increased worth and productivity to the organization, the individual will seek employment elsewhere or will perform at a lower standard.

RELEVANCE TO HIGHER EDUCATION

The management method proposed by Deming should be implemented in a variety of settings including service fields, one of which is higher education. The concept of training, however, should not be confused with the primary mission of education—a distinction made by Pestel (1988): "To train is to form by discipline or drill, to mold a subject into conforming to a predetermined pattern of behavior. Skills (specific behavior patterns) may be acquired through training, but developing a skill is not necessarily synonymous with gaining an education" (p. 28). Education, on the other hand, implies teaching critical thinking, collecting facts, and synthesizing ideas. "The important implication is training does not cultivate the ability to solve problems" (Pestel, 1988, p. 28). Deming does not address the differences between training and education. Training cannot be substituted for education but can and should complement the educational process.

Training and Quality in Higher Education

Quality and excellence are very evident in today's higher education literature. Astin (1987) believes that "our traditional beliefs about excellence or quality in American higher education do not serve us well. Not only do these beliefs interfere with our attempts to achieve greater equality of opportunity, but—ironically—they also frustrate our attempts to upgrade the quality of the system" (p. 1).

Training, as proposed by Deming, can be applied to higher education with the expected result of improvement not only in quality but also in productivity. The concept of training is appropriately applied in higher education when the employee—administrator, faculty, or staff—encounters a new task or new equipment. In this sense, training is more appropriately termed development.

Faculty Development

Faculty development is one of the most pressing needs in small colleges and universities and is becoming more important to larger universities (Miller, 1985). New college faculty are acquainted with the classroom through the student and possibly the teaching assistant role, yet it cannot be assumed these experiences and an advanced degree have adequately prepared them to teach.

Guidance in the development of these new skills should be available for junior faculty. Mentoring programs have been shown to be beneficial. These programs should be distinguished from the method of worker training worker. Mentors are senior faculty who share pedagogical expertise and serve as role models. The preparation of faculty should begin in graduate school as mentors carefully critique the work of graduate assistants (Boyer, 1987).

For the first year or two, new faculty members develop pedagogical skills not only through mentoring relationships but also by attending workshops that are designed for college faculty. Administrators should consider not only the contribution of faculty development programs toward the educational goals but also those programs that can enhance the overall teaching quality in their institutions. Faculty development programs can also offer experienced faculty the opportunity to rethink and change their teaching strategies.

Senior and junior faculty may need new or re-education for new and different responsibilities. For example, computers have created a need for faculty training. Orientation to the use of audiovisual equipment is also useful for new faculty.

Browne and Keeley (1988) identified several ingredients in successful instructional development workshops: (a) Faculty members should perceive the need to improve their teaching in the manner that is suggested by the workshop; (b) campus planners should define and articulate the needs of faculty before contacting the workshop facilitator; (c) campus administrators should emphasize the importance of the teaching role; (d) an adequate amount of time should be allowed for the type of improvement being presented; (e) practical suggestions should be postponed until participants understand the content of the suggested change;

(f) follow-up activities should be included as components of workshop participation; and (g) partisans should be identified to provide continuing effort to keep the workshop ideas and approaches alive. The benefits generated by a successful instructional development workshop can be well worth the effort required. The key to their success is assertive, open communication about the objectives of the workshop (Browne & Keeley, 1988).

The Deming Management Method, when applied to higher education, would require training for the specific responsibilities that will be assumed by the faculty as well as formal orientation to the organization. Zemke (1989) has identified six themes that are evident in the literature on employee orientation and socialization: (1) management should set high expectations for their programs, stay with them, and refine them until the desired results are accomplished; (2) management should be involved in orientation; (3) new employees predictably experience anxieties, and the orientation process can help reduce tensions; (4) alignment of new employee expectations with the actual new job responsibilities can take place during orientation; (5) senior management should also be involved, and; (6) meaningful work should follow the new employee's initial training.

It is the responsibility of administration and faculty leadership to define the boundaries of acceptable behavior and to assure faculty understanding of what is acceptable and unacceptable behavior. Administration has the responsibility for planning the development process, and for assessing the need for training as well as participating in the program itself. Faculty development should be continued until the performance of the faculty is in statistical control; that is, the faculty member is functioning within the defined limits of acceptable performance.

Eble and McKeachie (1985) warned that there can be danger of insensitive administrative involvement: "A faculty development program may be perceived by faculty as an indication that the administration thinks the faculty is so inadequate that it needs special help to improve" (p. 208). Successful programs have been observed to be college programs, not belonging to administration or faculty. Many of the same principles of faculty development apply also to developmental efforts for administrators. Formal programs as well as strong mentors can assist the administrator in his or her new role.

Staff Development

Miller (1985) wrote: "Good personnel policies are a key element within the institutional service area; they should contribute to the effective operation and management of the institution. The conditions of employment, as a minimum goal, should be at least equal to the acceptable conditions of employment in the surrounding community" (p. 138). Policies regarding training of new employees and training for old employees when faced with a new task or new equipment should be included.

In order to achieve acceptable levels of staff quality and productivity, the administration needs to define and to communicate acceptable standards of performance. Improved quality and productivity are the expected outcomes of the training program. Specific training programs should be designed by administration to help support staff achieve statistical control. If the employees are functioning outside the acceptable boundaries of performance, they should be given an opportunity to identify the unacceptable behavior and to correct it, or to have a performance appraisal completed by the administration. Ongoing evaluation of support staff can assist in determining the level of performance.

CONCLUSIONS

Deming's Point Six emphasizes the importance of on-the-job training rather than expecting employees to learn their jobs from their co-workers or from printed instructions that may be difficult to read and understand. Training, as proposed by Deming, has utility in higher education as a way that will enhance the quality and productivity of faculty, administrators, and the support staff. In some respects, higher education is ahead of Deming on this point in that some excellent developmental programs are in place. The extent of these programs is not great, and many programs are almost afterthoughts rather than carefully planned experiences.

The concept of training differs from education. When an administrator, faculty, or staff member is faced with a new task that involves learning a skill, training is appropriate. However, if analysis, synthesis, critical thinking, and problem solving are necessary, training will not be appropriate. Training, when used effectively, can complement but not replace the educational process.

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8

Point Seven: Institute Leadership

By Ronald J. Hyson

Point Seven represents a change from Deming's earlier work on management, and perhaps even a change in emphasis. In *Quality, Productivity, and Competitive Position,* Deming listed Point Seven as "Institute Modern Methods of Supervision" (1982, p. 32), citing the important role that management plays in the improvement of productivity, focusing on the relationship between the foreman and the manager. Deming noted that supervision was part of the system, that management must enable the workers to take pride in their work, that foremen must have the power to get the job done on the floor, and the focus must be on people. In more recent years, however, Deming expanded the role and importance of leadership in the management process; and Point Seven became "Adopt and Institute Leadership" (Deming, 1986, p. 54) and more recently, "Institute Leadership," in Walton (1986, p. 70).

The primary thrust of Deming's message, however, has remained unchanged. If the decline in productivity and the quality of American goods is to be reversed, a radical change must occur in the western style of management. The traditional methods to increase productivity are no longer adequate. Deming states that one of management's more current approaches—management by walking around (MBWA)—is not enough: "The reason is that someone in management, walking around, has little idea about what questions to ask, and usually does not pause long enough at any spot to get the right answers" (1986, p. 22). Management, according to Deming, "...also has a responsibility to improve the system i.e., to make it possible, on a continuing basis, for everybody to do a better job with greater satisfaction" (1986, pp. 248-49).

To bring about this change, Deming believes that leaders first must remove the barriers that make it difficult or impossible for workers to take pride in their work. To illustrate his point, he uses the story of an airline reservation clerk whose job involved answering the telephone, making reservations, and providing information to customers. She was expected to make 25 calls per hour while providing courteous service to every customer. She faced two main obstacles almost every day: the computer would be slow in providing the information or it would be down, providing no information and forcing her to use directories to find the needed information. It was not possible for her to take pride in her job because she could not be sure what was expected of her—25 calls per hour or courteous service.

Second, leaders must know the work they supervise and must have the authority to take the necessary actions to enable workers to succeed. One of the main problems with the western approach to management is the focus on numbers and quotas. Often emphasis is placed on counting or on quotas because supervisors do not know the work they are supervising, but they know how to count. When quotas become the measures of success, quality suffers and workers become frustrated.

Third, mistakes in production must be attributed to the system and not blamed on the workers. "The aim of leadership is not merely to find and record the failures of men, but to remove the causes of failure: to help people do a better job with less effort" (Deming, 1986, p. 248). The change in approach suggested by Deming is also illustrated in this description of leadership in action: "A leader, instead of being a judge, will be a colleague, counseling and leading his people on a day to day basis, learning from them and with them. A leader will spend hours with every one of his people. They will know what kind of help they need" (Deming, 1986, p. 117). Deming believes that leadership is the key to making the changes necessary to enable the United States to regain its former stature as a world industrial power.

DEMING'S LEADERSHIP STYLE APPLIED

In an effort to understand better Deming's position, three aspects of his leadership philosophy need to be considered: A leader must be concerned with people. This concern cannot be expressed in the usual sense of outputs and goals. In order to be successful, a leader needs to break with the past and change the way he or she relates with those on the floor. Number ratings of any kind will divide the workers into three groups: below average, average, and above average. Those workers outside the established control limits should either be retrained or reassigned. Deming indicates that "the job of the leader is to shrink the control limits, to get less and less variation in the process, or less and less difference between people" (Walton, 1986, p. 92).

Teamwork is the key to success and everyone should be involved in the decision-making process. The days are over when the manager tells workers what must be done and how to do it. In the Deming method the leader works to involve everyone in the process, allowing all employees to have input into what should be done and how to best complete the task. No matter what product is being produced, the leader must focus on equipping and enabling workers to succeed at their work. This approach has a positive effect on the morale, productivity, and accountability of the individual worker.

Second, a leader must be committed to almost constant improvement in the product's quality or the service provided. Quality, while the goal of every leader, is not the primary consideration. Quality is the result of equipping workers to do their jobs successfully. As the leader communicates with those on the floor, listens to their suggestions, and involves them in the decision-making process, quality and productivity increase and change results.

This commitment to quality can be illustrated in the way automobiles have been made and marketed. Before Deming, the Ford Motor Company would design, produce, and market an automobile, then wait for customers to point out problems and weaknesses needing correction. After the Deming management method was implemented at Ford, new models were designed and built by teams of workers from all departments and new products were tested by potential customers before mass production began.

The leader should consider management a holistic process—a third aspect of leadership. Decisions need to be based on what is often called the "big picture." A leader does not base decisions on hunches or good ideas; rather he or she is involved enough in the process to understand the situation, what the options are, and what effect those options will have on the organization as a whole. Deming's Point One—"Constancy of Purpose"—is relevant. Without a clear understanding of why the organization exists and where it is headed, the leader will have difficulty determining the most promising course of action. This holistic view of management is a unifying concept because it brings many of Deming's 14 points together under one heading—leadership.

ANALYSIS

Point Seven seems, at first, vague. Deming offers no formula for the application of the principle; rather, he describes the environment in industry which he believes warrants a renewed call for leadership. Some would suggest that Deming's view is too broad and that it is not possible for a manager in today's competitive marketplace to provide this type of leadership. While this point may seem a weakness in the beginning, it becomes Deming's greatest strength. In order to understand and apply Deming's leadership style, one needs to consider all 14 points and their illustrations because his thoughts on leadership are expressed throughout them. Deming makes it clear that leadership is the key to the successful transformation of western management. His advocated style of leadership goes beyond the normally accepted scope of managers who spend their time putting out fires and dealing with the negative situations that arise as a part of the management process. The Deming manager is proactive rather than reactive. Deming supports his approach to leadership by citing a host of personal examples collected during his many years as a consultant.

RELEVANCE TO POSTSECONDARY EDUCATION

In order to evaluate the Deming method and to determine the relevance of Point Seven to postsecondary institutions, the differences between postsecondary institutions and the corporations that have used the Deming method need to be understood. Postsecondary institutions have been described as loosely coupled (Weick, 1976) organized anarchies characterized by unclear goals and where participation on the part of the members is erratic and unpredictable at best (Cohen & March, 1984). Corporations are generally characterized by a more tightly coupled structure and organization. Birnbaum (1988) wrote: "Although it is tempting to consider a college or university, in view of its corporate existence, as being comparable in many ways to a business corporation, the differences between the two are striking. Business firms, unlike institutions of higher education, have no tenured faculty members, face no criticisms from employees shielded by the principles of academic freedom, and have no alumni" (Birnbaum, 1988, p. 28).

These differences have led some, including Birnbaum, to conclude that traditional management theories cannot be applied to postsecondary institutions, particularly in the area of leadership. Others have differing perceptions and endorse leadership styles and approaches which are based on the similarities between the corporation and the postsecondary institution. For example, management approaches previously limited to the corporate realm were offered as solutions to the difficulties faced by postsecondary institutions during the 1980s. Three management approaches which have been applied to higher education are strategic planning (Keller, 1983), the management of organizational culture (Tierney, 1988), and the benefits of entrepreneurial leadership (Peck, 1983). In addition, increasing numbers of retired corporate executives are serving educational institutions as management consultants (Scherman, 1985).

Leadership

Leaders tend to have allegiance to one of the two approaches described in the previous paragraph. In the loosely coupled ambiguous organization, leaders follow a different pattern than that of the typical corporate executive. The chief executive officer of a postsecondary institution would make a mistake to assume that what he or she does in office will have any significant effect on the "long-run position of the institution" (Cohen & March, 1984, p. 245). Cohen and March continue: "So long as he [the president] does not violate some rather obvious restrictions on his behavior, his reputation and his term of office are more likely to be affected by broad social events or by the unpredictable vicissitudes of official responsibility than by his actions" (p. 245).

Birmbaum also suggested that it is difficult for campus leaders to have a significant and lasting effect on the institutions they lead. Birmbaum stated that "cybernetic institutions tend to run themselves, and upper-level participants tend to respond to disruptions of ongoing activities or to improve selected activities through subtle interventions, rather than to engage in dramatic attempts to radically change institutional functioning" (Birmbaum, 1988, p. 197).

The second approach to leadership has been described by Miller (1985) as dynamic leadership. Dynamic leaders are "...effective, tenacious administrators and managers of resources and people, unlike the presidents in the Cohen and March findings" (p. 166). This approach to leadership is supported by Sharp (1984), Green (1988), and Fisher, Tack, and Wheeler (1988). Fisher and associates concluded that effective college presidents believe in participatory decision making; however, they recognize that the ultimate responsibility for making the decisions rests on their shoulders: "They understand that there is no such thing as collegial leadership, but they always seek opinions and facts from those to be affected by the decisions. Although the decision may not reflect consensus, it represents the most appropriate course of action for the enterprise" (Fisher and associates, 1988, p. 39).

Further, Sharp asserted that "presidential styles changed and management skills took different forms as institutions and society changed. But strong and effective leadership never went out of style" (1984, p. 16). Regardless of the leadership style espoused, the Deming method is relevant to postsecondary institutions.

Applying Deming

Postsecondary institutions and corporations are different and each has its own set of internal and external constraints. Green (1988) wrote that all educational institutions are different in that each is characterized by its ever-changing environment. As a result, leaders need to change their style to fit the environment they seek to lead. This is one of the strengths of the Deming method. Deming does not promote a style of leadership as much as a philosophy of leadership—one that guides the leader in organizational management. This position is evidenced in the three leadership priorities already mentioned in this chapter: the leader's concern with people, commitment to constant improvement, and view of management as a holistic process.

Concern with People

The collegiate leader should be concerned with enabling all academic and non-academic personnel to succeed in their work. At least five of the 14 points relate to the leader's responsibility to co-workers: Point 6 "Training and Retraining," Point 8 "Drive Out Fear," Point 9 "Break Down Barriers between Departments," Point 12 "Break Down Barriers to Pride in Workmanship," and Point 13 "Institute a Vigorous Program of Education." Postsecondary institutions are, as a rule, labor intensive and a major portion of the institution's resources are committed to the salaries and benefits of its faculty and staff; therefore, equipping them for success needs to be the leader's primary concern. This effort includes a wide range of activities related to the training and development of faculty, staff, and administration.

Leaders should also meaningfully involve co-workers in the institutional planning and decision-making processes. Hollander (1987) wrote that society views leadership as participatory and, on that basis, workers expect more involvement in institutional decision-making processes. In postsecondary education the academic committee system provides a major avenue for the faculty involvement. Some recent literature on campus governance and leadership focuses on the negative aspects of the committee structures found on many campuses, describing them as limitations in our system of higher education, and as impediments to effective and efficient leadership. The successful implementation of the Deming method, however, requires the sustained involvement of all employees in ways that are relevant to their responsibilities.

A Commitment to Constant Improvement

Successful leaders are committed to constant institutional improvement. It involves the issue of quality, and in the Deming method quality is the result of a systems approach rather than an emphasis on quotas or numbers. But in today's campus environment, the great majority of CEO's are concerned with numbers. There are admissions goals, counseling goals, and advising goals—all related to the perceived success and perpetuation of a quality institution. Deming contends that quality is the result of carefully designed systems, not numbers or quotas; therefore, attention should be given to the admissions process rather than to admissions goals, and to solving problems and offering guidance rather than more casual public relations activities. The current emphasis on numbers might provide the biggest area of resistance to the implementation of the Deming method. Numbers have become a way of determining the value and effectiveness of programs, and sometimes even the departments themselves.

The key to increased quality involves focusing on the processes rather than numerical quotas, as well as providing all employees with the means to succeed. To further discern whether the CEO and the organization are committed to quality, Deming would ask: Do the leaders of the organization wait for customers' complaints (students, faculty, or parents) or is there an internal commitment to discover mistakes before the customer makes that discovery?

Management as a Holistic Process

The ability to see management as a holistic process is the most important aspect of effective campus leadership. To Deming, the leader must be sufficiently involved in the process—in this case, the management process—to understand how best to fulfill the purposes of the institution. The responsibility of the campus leader was described by Kauffman (1984): "The tasks or functions include, first, leadership, which I separate from management and control. That leadership function is to keep all concerned, both inside and outside constituencies and forces, keenly aware of the central purposes, values, and worth of the higher education enterprise. The president should be...the one person who does not lose sight of the institution's goals" (pp. 236-7).

Effective campus leadership requires a clear vision of what the institution is and what it should be (Briscoe, 1988; Pruitt, 1988). Hesburgh contends: "It is not enough to have a vision of sorts, somewhat muddled. The leader must know clearly what he or she wants to achieve and...have the ability to articulate the vision in equally clear words and images" (1988, p. 6). Vision, an often overlooked aspect of academic leadership, is an outgrowth of a holistic approach to management, and it can be a driving force for leaders and all who are associated with their organizations. Vision also relates to the concept developed by Miller (1990) in writing about industrial emphases: "The lesson to be learned by colleges and universities is that there is a trap which applauds short-term successes at the expense of long-term gains" (p. 184).

CONCLUSIONS

An abundance of research as well as opinions exist about the role of leadership in organizations and corporations, and no dearth exists of individuals who see themselves as effective leaders. However, as Harris and associates point out, "unfortunately, many are skilled at giving the illusion of leadership, which is equally as destructive as its absence" (1989, p. 61).

The value of the Deming method is that it is not a formula; it is a philosophy which guides the leader in the establishment of priorities. Point Seven in the Deming method is essential to the implementation of the other 13 points. Leadership is the thread that weaves the other 13 points together and forms the basis for a tapestry of concepts that could improve the leadership and management of postsecondary education.

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9

Point Eight: Drive Out Fear

By Luther G. Smith

This point addresses the need for management to eliminate, as much as possible, supervisory methods or situations which threaten the security and comfort level of the employees in the workplace. Deming states that fear in any form constitutes loss from impaired performance (1986). Whether that fear is real or perceived, decreased productivity and the potential for low performance is heightened. Often employees believe that they will start an argument or set off a chain of negative events if they question the system or the supervisor. They may feel that by challenging the status quo, they may jeopardize their job security. It is therefore safer for individuals who feel such pressures to do as they are told, without question, and reduce the risks of disharmony or loss (Walton, 1986).

FEAR DECREASES PRODUCTIVITY

People need a consistent, supportive, non-threatening, secure working environment (Gitlow & Gitlow, 1987). Whenever an atmosphere exists which continually breeds confusion and antagonism, people will not take as much pride in their work; instead, they will be on guard to protect their position, and they likely will focus on issues related to inequity or job security rather than on ways and means to work more efficiently and effectively for the organization (Deming, 1986). People who are driven by fear will likely be too apprehensive of perceived or potential threats to use their creative initiatives to bring about improvements because of the fear that suggestions might not work.

Deming views fear as counterproductive and appalling in that it is a chief contributor to economic loss (Walton, 1986). By reducing and eliminating fear in the workplace, customer satisfaction, which is equated with quality, can more readily be acquired. The person who is secure and who is able to work in an environment characterized as relatively free from anxiety and who is not made to feel inadequate will put forth a greater effort to do a good job. Likewise, physical ailments, which in many instances are associated with stress and depression, will be reduced and job performance will increase. In the end, a better product will result. When the product is passed onto the consumer, profit margins will increase because of customer satisfaction and loyalty.

MANAGEMENT'S COMMITMENT TO BRING ABOUT CHANGE

To eliminate fear in the workplace, Deming emphasizes the responsibility of management, just as he does in the other 13 points of his management method. He stresses that whenever there is a general feeling of powerlessness among workers due to a manager or an organizational structure that has arbitrary control over important aspects of their lives, change in personnel and/or structure should take place if the organization is to be successful and qualitatively productive (Gitlow & Gitlow, 1987). For change to occur, however, commitment needs to come from top level management, and subsequently influence every segment of the organization.

Existence of fear in a work setting can result in poor morale, poor productivity, stifling of creativity, reluctance to take risks, ineffective communication, and a reluctance to work for the best interests of the organization (Gitlow & Gitlow, 1987). The processes and strategies for addressing these consequences can generate a level of support and commitment from worker groups toward the organization. Since people generally work harder when their felt needs are getting attention, management at all levels needs to focus on being perceptive to the needs, issues, and concerns of those they supervise.

TRUST AS A MOTIVATOR

In order to more fully understand means through which fear can limit quality, productivity and performance, the benefits of the opposite of fear—which is trust—should be recognized. Trust, like fear, is a key to understanding systems (Gibb, 1978). Working environments, for example, constitute a good portion of daily routines and social interactions for those who are engaged in the workforce. They therefore regularly encounter situations which bear out varying degrees of fear as well as trust in attitudes and perceptions about those circumstances.

Trust is a widely recognized human attitude, and like fear, it serves as an impetus for acting out behaviors in relationships. A person who trusts another places a sense of security and confidence in those relationships. Openness and symbiotic relationships in present and future dealings are most likely in trusting environments. Through trust and communication, workers are more apt to adjust their behaviors to best serve the organization (Leavitt & Bahrami, 1988).

FEAR AS A POSITIVE FACTOR IN THE WORKPLACE

Whereas trust is a desirable attitude for employees to have in their relationships with supervisors and peers, some forms of fear may be appropriate and beneficial for both employees and the organization. Scherkenbach writes that fear will never be entirely driven from the workplace (1988). An employee, for example, may fear certain consequences for being consistently late for work, therefore, making certain to arrive on time. By being punctual the employee reduces anxiety about the supervisor's reaction, and the organization also benefits because the employee is contributing to a smoother running operation. Likewise, another person may fear possible repercussions for not completing a project on time; therefore, working more diligently to meet deadlines. Although the potential negative outcomes may never happen, the existence of an element of fear may assure that those outcomes will not occur.

From childhood, we are taught that there are certain things that should be feared, and that everyone is afraid of something. Rules and regulations are established to be followed, and these guidelines protect people from possible harm. In addition, people are taught that whenever rules are broken that they put themselves at risk. If there is no fear, dangerous situations may not be evident; therefore, the presence of fear may help to protect those to whom the rules apply (Bacigalupi and associates, 1975). This kind of fear serves as a means for checks and balances which caution people from testing their limitations.

In these instances, and in other similar ones, fear may serve a positive function and may contribute to the health of the working and living environment in terms of attitude, productivity, and the quality of life in the workplace (Gibson, Ivancevich, & Donnelly, 1988). This point is not to imply, however, that fear works better than does trust for personnel management.

FEAR AND THE RESISTANCE TO CHANGE

Champagne and McAffe (1989) contend that productivity improvement programs cannot be implemented unless employees are willing to change their behavior. Further, they examine why employees may resist change, giving five causes of resistance to change: Inertia (forced to change), fear of the unknown, insecurity and fear of failure, obsolescence (no longer being useful), and ideological objectives (fear that there is no tolerance for human error).

Fear of the unknown is often why people strive to maintain the status quo although the situations in which they find themselves may be unsatisfactory. It is easier for them to carry out their accustomed routines and to adhere to the expectations of their supervisors than it is to try something new.

Although the situations in their working environment may be difficult, people identify the problems and compensate by making adjustments. While individuals realize that changes could bring about the improvements, they are also aware that there are no guarantees. Both a hope for success and a fear of failure may be evident (Stahl, 1986); therefore, they may be reluctant to give up the routines and practices they know and understand for new ones that are unfamiliar to them.

When people are forced to accept a new idea or procedure, their resistance may come from their personal fear of failure. If this happens or is identified as a possibility for resistance, it is advantageous to implement a strategy within the organization whereby people can be reassured of success. A trial approach will give those involved a chance to observe and participate in the new program in a nonthreatening way. Through this approach participants will have an opportunity to gather the facts which either refute or justify their fears.

Skills or knowledge obsolescence is a common fear for many people who are faced with change strategies. For example, if a person doubts his or her ability to become proficient with the new computer system, strong resistance to the change may be evident. This behavior is most likely if years have been invested to acquire and to build high skill and knowledge levels. If the new program may result in loss of job or status in the organization, the change probably will not be supported by affected individuals.

People may resist a new program because it threatens or questions their basic values and attitudes. For example, a manager who strongly believes that participative management is a lot of foolishness will not be enthusiastic about allowing employees to participate (Champagne & McAffe, 1989). In such cases, resistance and failure to accept change is perpetuated since it is not getting the support it needs from the management. Resistance from the management levels can effectively circumvent the change strategy before it is fully implemented. Here, Deming's Point Eight is very viable.

CHANGING BEHAVIOR

If fear in the workplace is a factor which hinders productivity and effective practices, approaches to modifying employee attitudes should be explored, targeted, and implemented. Robertson and Smith (1985) believe that behavioral approaches which emphasize the role of external factors, such as rewards and the influence of other people, sidestep the issue of internal psychological factors. The external approach tends to deal more directly with the factors that influence behavior (performance) at work than with changing behaviors. Motivation, satisfaction, and leadership are not treated as ends in themselves; instead, the practices and behaviors exhibited by employees are the empirical reality, not the labels attached to the attempted explanation of the behaviors (Robertson & Smith, 1985).

When attempting to change behaviors among members of a given working constituency, it is important to become aware of individual differences as much as possible among the working groups. What may be perceived as positive reinforcement for one person or group of people may have negative ramifications for another. Both negative and positive reinforcements can influence behavior. Whereas positive reinforcement can result in giving something desirable to the person or group involved, negative reinforcement can render the effect of removing an unpleasant stimulus. Negative reinforcement, which is not to be confused with punishment, could in effect produce desirable behavioral consequences.

An important consideration for all levels of management in changing behaviors is that a significant amount of time should be spent in determining the strategies that will most benefit the organization. Where fear or resistance to change emerge, those who are impacted by the change need to be helped through the process rather than plunged into programs that they can not justify or understand. Top level management has the responsibility to provide the long-range vision that brings about the change, and use that vision as a general guide in acquiring the support of those who will be affected by it.

RELEVANCE TO HIGHER EDUCATION

Deming's Point Eight is applicable to those who work in a higher education environment. Although a degree of fear can serve as a healthy factor in helping the organization maintain a disciplined and smooth running operation, it can also be a serious detriment. A key factor for people who serve an institution in supervisory capacities at all levels is that human resources should be valued. If academic and non-academic personnel are to invest quality time and energies to being productive and to benefit the institution optimally, they may need to believe that their position is secure and their work is appreciated. Those who serve in postsecondary institutions come from many national backgrounds and international cultures with diverse and varying levels of knowledge and expertise in an array of areas (Boyer, 1987). Because the contributions that employees offer to the institutions differ greatly, the perceptions about situations which impinge upon their jobs may also differ considerably. It is the responsibility of top level administrators to monitor and regulate the kinds of fears that can result in undesirable behavior (Deming, 1986).

Commitment and Quality Assessment

Future issues and concerns for higher education both are alike and unlike those of the past. In order for many institutions to survive, even in terms of keeping their doors open, there is a growing need to assess the total workforce through quality assurance. Programs which involve a commitment from college or university constituencies (administration, faculty, staff, and students) are being designed and implemented (Townsend & Gebhardt, 1986). Comprehensive employee involvement is required to assess accurately where the institution wishes to go and what human and material resources are needed to get there (Miller, 1985). Programs which focus on quality improvement help to assure the delivery of a marketable product, which is better student learning (Gibson and associates, 1988). The challenge to accomplish these goals, however, is to obtain a commitment from all levels of the institution with the CEO. With genuine commitment from those levels, the tone can be set to focus on quality, which can have a compelling effect on every segment of the college or university.

Unhealthy Fear Factors in Higher Education

If institutions are to survive, they must be responsive to their environments (Birnbaum, 1988). Unhealthy fear may hinder the various constituencies from fulfilling their responsibilities, thereby contributing to functional inabilities of the administration, faculty, and staff.

Where fear and apathy exist, the students are ultimately deprived of quality educational opportunities. If faculty members are being pressured to do research and to publish in order to be considered for promotion and tenure, attention to student needs may be overlooked. Likewise, a faculty member whose strength is teaching may not give adequate attention to scholarly contributions. A balance needs to be struck between teaching and research (Boyer, 1987). Focusing on establishing this balance as well as on an environment where employees are not blamed for the problems of the system will yield more positive and productive outcomes.

The educational mission of the institution is disrupted when the attitudes and behaviors of those who are responsible for contributing to the total education of students are not able to obtain timely responses to their legitimate questions. In addition, when students have difficulty acquiring accurate and relevant information and the resources they need when they need them, the institution is falling short in its responsibility for providing them with optimal educational opportunities. In essence, faculty and staff members who feel threatened or are unhappy in their working environment due to fear or other factors which threaten their security, may contribute more to the institution's problems than to their solutions.

The educational process should provide students, as much as possible, with rewarding and problem-free opportunities. Learning is the core of the postsecondary educational experience. By making changes in authoritarian or unresponsive management styles to styles that are based on trust, respect, consistency of purpose, and effective communication, quality teaching and enhanced productivity are more likely to be realized.

CONCLUSIONS

By removing negative and inhibiting managerial practices, perhaps every person on the college or university payroll can actively engage in improving the system (Townsend & Gebhardt, 1986). When Deming's Point Eight is practiced, people may be more open in asking questions and making suggestions to achieve a better functioning operation. They will not be as likely to conceal information about inefficient practices they have observed, and they will feel that their jobs and their contributions are valued. When employees believe that they are evaluated upon their merit rather than their status or political factors, they take more pride in the work and in the working environment. Trust, involvement, communication, and productivity are the elements which assure quality service to students in higher education.

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10

Point Nine: Break Down Barriers Between Departments

By D. Kevin May

The concept of working together, proclaimed by numerous management authors as the key to excellence in American business, has yet to be incorporated into daily business practices in many organizations. The weekly administrative roundtables and department meetings are efforts toward reaching a culture of shared goals and mutual understanding in the organization, but they may be examples of too little, too infrequently. Teamwork and the realization of common organizational goals throughout the organization can be accomplished by management if the system allows and develops it. Deming advocates the need for each employee to develop a universal view of the organization. This perspective will permit the workers to perform their jobs better through gaining insight as to how individual tasks affect the total performance within the organization. Through coordinating efforts and limiting goal conflicts, the organization can prevent the possible deterioration of quality production and service.

THE PARABLE OF THE SHOES

Deming illustrates the need for teamwork with the parable of the shoes. In this allegory the various departments of a manufacturing company did not communicate their ideas and goals that were related to the development of a surefire hit in the shoe marketplace. The design staff of the organization produced eight prototypes of this shoe for the sales staff. As was believed by the designers, they had developed a high sale item, as evidenced by extensive shoe orders. Design and sales had tapped a market that could increase the success of their company; however, this possibility did not occur because manufacturing was never consulted during the development and marketing phases. When so many orders were received, the factory had not been geared up to meet the demands. Not only did the lack of inclusion of the company's manufacturing staff prevent the successful production of a successful product, employee commitment to the product suffered outside the two departments which had promoted the shoe.

Deming believes that people who are forced to administer policies that they had no hand in drafting and with which they may disagree do so half-heartedly and without uniformity, thereby angering and turning away customers (Walton, 1986, p. 74). If the manufacturing staff had been involved from the start, this surefire hit may have been a success. Involvement by the manufacturing staff early in the process would have allowed for input from that department and have permitted them time to plan for its production. Even the most challenging drawbacks may have been overcome by a unified staff committed to its company's common goal.

Deming believes that this unity should go beyond departments. "People can work superbly in their respective departments, but if their goals are in conflict, they can ruin the company" (Walton, 1986). Communication, shared responsibility, and teamwork must be supported from the administrative levels of the company. Employees need to be encouraged and arrangements made that will allow them to cross department lines to gain understanding of the various goals, procedures, and practices performed in other units. When a holistic understanding is developed, members of each area can better focus on the common goals of the company.

"JUST-IN-TIME" PRODUCTION

Teamwork facilitates utilizing what Deming terms "just-in-time" production. This method of production is common in the Japanese workplace, and it requires the cooperation of each department to communicate its supply and demand of needed resources for production. As supplies are needed, the resources are delivered at the needed time for manufacturing. This process limits the need for excessive inventory as well as the put down and pick-up time that is required to handle large inventories. Successful just-in-time production requires stable organizational and managemental processes, which need to be statistically calculated and controlled. It also requires a view downstream anticipating needs and changes. The final purpose in this form of production is to do things right the first time.

Deming's concept of just-in-time manufacturing is not widely accepted in American industry. Schoneberger (1982) wrote that this circumstance is because we have not been forced to adopt this method of manufacturing because of abundant space, energy, and material resources. As long as American industries are experiencing prosperity and the current systems of manufacturing are employed, the advantages of just-in-time manufacturing probably will not be realized. The influx of Japanese firms into the United States is causing serious re-thinking along these lines, however.

Deming believes that employees are willing to perform better, but management is failing to provide the system necessary for improvements. Breaking down of barriers between departments and divisions within an organization allows management to carry out their responsibilities better. By encouraging employee involvement in multi-departmental activities, promoting inter-departmental information sharing, and allowing greater individual responsibility, management can develop a system of greater overall organizational effectiveness.

Deming sees the employee as a self-motivated and self-directed individual who often works under the limitations of a poor management system. Given the proper environment, workers will take pride in the organization, develop a commitment to their tasks, and take the risks and responsibility needed for Point Nine to work. Schonberger (1986) viewed the environment as the key to success of American industry. "The plant should be organized to get processes, people, and equipment aligned" (p. 122). This realignment of industry yields the benefit of getting people into teams and thereby facilitating a greater sense of employee unification. From this pattern can flow individual pride and commitment toward the organization, which is the capstone of the successful American business and a quality product.

DEMING APPLIED TO HIGHER EDUCATION

Breaking down barriers between departments has direct applications to higher education; however, the concept of teamwork may hold intrinsic difficulties for endorsement in America's colleges and universities. The tradition of academic freedom, competitiveness of individual departments for funds and student enrollment, and a fundamental American individualism can present obstacles to the acceptance of this point. To overcome these obstacles and cultivate a milieu of cooperation in higher education requires support and sponsorship from the institutional leadership.

Deming believes you can find teamwork in almost any organization regardless of the system and its leadership; however, it is management's job to help staff areas work together. As is evident in Deming's Point Seven on Institute Leadership, leadership is the job of management. "It is the responsibility of management to discover the barriers that prevent workers from taking pride in what they do" (Walton, 1986, p. 70). Without strong institutional leadership, employees likely will continue to perform at a level below their natural abilities. Employees can provide valuable insights on how to improve quality and service within the institution if given the opportunity and if the barriers of fear are removed.

Teamwork

"Teamwork requires one to compensate with his strength someone else's weaknesses, for everyone to sharpen each other's wits with questions" (Deming, 1986, p. 64). As various academic departments focus on specific goals, each is responsible to other departments for meeting the common goals of the institution. In higher education, this interdependence can be seen in a number of ways. For example, if the admissions office does not properly inform students of the requirements and outcomes of various majors, they may place greater demands on counseling services. Or if students are improperly advised about courses or if prerequisite courses are not taught to meet necessary content requirements, faculty members may teach students who are ill-prepared for the course. Deming would see this breakdown in the system as a problem to be addressed by the CEO and senior administration of the institution.

As in the parable of the shoes, when ideas, requirements and procedures are not communicated to the various company units, deterioration of quality, service, and stability are the likely results. Institutions of higher education that do not communicate the shared goals of the organization and the requirements of its programs to the employees may experience a similar diminution in quality.

In creating a climate that is conducive to teamwork, the administration should give its employees guidance in the fundamentals of teamwork, while still facilitating an individual sense of mastery. Management also needs to provide the employee with opportunities for increased recognition, advancement, growth, and responsibility. Without these job components, workers may lack drive and feelings of personal success (Hodgetts, 1979).

Teamwork can be promoted in the educational setting in a number of ways: First, management should make teamwork a stated goal of the institution. If the senior collegiate leadership does not strongly endorse the idea and subsequently stay with its implementation, it will not succeed. Second, opening channels for communication needs to be a priority. These openings can be accomplished through department visitations by those in other units, job sharing and rotations, the development of a liaison program with different units on the campus, and by encouraging staff involvement in task forces and committees. Breaking down of barriers between and among work units can enhance employees' overall organizational knowledge and understanding, and likely it will increase their overall competence.

With these channels of communication developed, meaningful input for institutional improvements can be solicited from those employees who have first hand experience in working within the systems developed by the collegiate leadership. This human resource affords leadership the opportunity for feedback about the system which can be used to cultivate a continuous cycle of improvement.

The current trend in many postsecondary institutions to combine studies from different disciplines into common courses is a step toward reaching a collegial environment of shared goals and responsibilities. Activities such as team teaching and multi-divisional courses fit with Deming's concept of teamwork. These approaches to coursework allow students to gain broader perspectives in relation to course application and content while encouraging teamwork among faculty.

Application of a Teamwork Model

With the goal of increasing institutional excellence in quality service, a large midwestern urban community college adopted and implemented Noel and Levitz' Connections program (Tschohl, 1988). This training program is developed for front-line staff, and it focuses on increasing the self-worth and self-image of the employees while concentrating on improving quality service to the students and the employees' co-workers. The primary goal of the Connections program is to educate staff in communication and awareness skills, and it also places employees from the various divisions into small group seminars where staff members are encouraged to share successes and concerns that they have experienced in their respective work units. As a result of these weekly encounters, the staff begins developing an understanding and appreciation for the responsibilities of others in the college.

The same concepts are used at this community college in the selection of members for its committees and task forces. The administration promotes multi-departmental involvement to increase the number of perspectives on any given issue. Birnbaum (1988) notes: "In a complicated world, it is possible to interpret any situation from a number of perspectives, or frames, any or all of which may provide useful administrative insights" (p. 209).

Participants in these programs not only developed stronger working relationships with individuals from other departments, they also began sharing methods for improving procedures to increase the efficiency of their jobs and the colleges. Deming's concept of breaking down barriers between departments and the promotion of teamwork had been constructively developed on the campus.

"Just-in-time"

With the teamwork model in place and channels of communication formed, a college or university can adapt Deming's "just-in-time" notion to its setting. Although Deming applies this procedure to manufacturing, it can be seen in a different light for service industries, serving as a tool to increase institutional effectiveness.

One lesson that can be taken from just-in-time is the way institutions of higher education choose to enroll incoming freshmen. The traditional system of offering orientations to the institution during the summer for autumn enrollment does not optimize timing for the student. With changes in attitudes about the nine-month school year that is seen in the movement toward higher summer enrollments, particularly in two-year colleges, developing avenues for incoming students to enroll immediately after high school may be an application of the just-in-time methodology.

Another issue of timing can be seen in the way that institutions sequence some courses. Students may be ready for graduation, but the one course needed to meet graduation requirements is not offered until the following year. Adapting a just-in-time process on the campus would encourage review of course sequencing to help prevent this dilemma, and also to explore individualized courses as a way of enhancing flexibility.

CONCLUSIONS

Deming's Point Nine on breaking down barriers between departments strives to increase quality of production, service to the customer, and promote efficient use of resources within the organization. The basic premise of this point is focused on organizational leadership's involvement in promoting teamwork and communication. The advantages of implementing this point may be obvious, yet the processes of achieving increased teamwork may be elusive and require patient and persistent efforts over time.

Institutions of higher education are segmented and compartmentalized by nature. With departments focusing their attention and energies on their own problems and issues, promoting increased interaction and shared goals is not easy. Teamwork also requires academics to choose to become team members. Birnbaum (1988) described one problem in his discussion of the "Cosmopolitan" and "Local" faculty members. The Cosmopolitan type chooses involvement in the broader dimensions of the discipline through commitment to national activities and associations, whereas the Local type focuses on the issues directly related to his or her immediate campus. Membership in a group or team may have quite different meanings for individuals with these two different outlooks.

Deming's model places responsibility for the development of cooperative arrangements on the senior leadership within the organization. Institutional leadership needs to examine and respond to numerous issues. Noting where gaps exist in lines of communication and taking steps to close them is a necessary step. Also, strategies need to be developed to promote cooperation and teamwork between departments and divisions. If current campus practices do not promote an environment of teamwork and trust, programs on staff training and development may be helpful. The outcomes of these efforts should focus on providing students with better educational experiences that meet their needs in terms of quality, selection, and timeliness.

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11

Point Ten: Eliminate Slogans, Exhortations, and Targets for the Work Force

By Shirley E. Meiners

Deming believes that slogans, exhortations, and targets do not facilitate improving performance. American slogans, such as "do it right the first time," and "zero defects," have a lofty ring; however, they generate frustration and resentment for employees. Such sloganeering implies to the workers that they could do better if they tried. They perceive slogans and exhortations as cliches which can be interpreted that management does not understand the workers' problems, and furthermore, does not care enough to find out (Walton, 1986). Deming (1986) states: "Your work is your self-portrait; would you sign it? No—not when you give me defective canvas to work with, paint not suited to the job, brushes worn out, so that I cannot call it my work" (p. 65).

Slogans, exhortations, and posters are directed at the wrong people, and they communicate to the worker that management is not aware that this approach creates barriers to pride of workmanship. Deming (1986) contends that management must understand that quality and increased productivity are the responsibility of management. He contends that formulation of goals without methods for reaching them is useless, and that a common practice among American managers is to set goals but not to describe how to accomplish them. In other words, management fails to provide the means to the ends it proclaims.

Deming emphasizes stability of the system. "It is totally impossible to perform outside a stable system, below or above it. If a system is unstable, anything can happen. Management's job, as we have seen, is to try to stabilize the system. An unstable system is a bad mark against management" (Walton, 1986, p. 77). It is the responsibility of management to stabilize the system, which includes providing employees with proper equipment and competent supervisors and addressing environmental concerns such as heat, light, and proper tools. The outcome of a stable system will be sustained quality, pride in work, and productivity as compared to the fleeting improvement of quality and productivity that result from campaign posters, exhortations, and pledges (Deming, 1986).

In time, strategies using slogans and posters cause employees to view management with fear, mistrust, and resentment. Additional results of exhortations, according to Deming, are unmet goals, increases in variability, costs, proportion of defective units, and demoralization of the work force. Deming believes that a more positive response could be gained by the employees if management posted information concerning better quality of incoming materials from fewer suppliers, better equipment maintenance, better training and/or statistical aids, and better supervision to improve quality productivity. He asserts that this approach would place the responsibility on management and boost morale of the employees on the job (Deming, 1986).

ANALYSIS

Point Ten addresses change in philosophy, practice, and in the system, and it places the responsibility for change on management. Walton (1986) conveys Deming's position: "You can beat horses; they run faster for a while. Goals are like hay somebody ties in front of the horse's snout. The horse is smart enough to discover no matter whether he canters or gallops, trots or walks or stands still, he can't catch up with the hay. Might as well stand still. Why argue about it? It will not happen except by change of the system. That's management's job, not the people's" (p. 77).

Identified in the quote are the critical elements of leadership—quality, sensitivity to the worker's needs, productivity, and commitment to improvement that fit with Deming's philosophy. Deming advocates the elimination of slogans and exhortations, but he is really saying develop quality products and there will be no need for the use of exhortations or platitudes. His management philosophy stresses continual and never ending improvement in quality.

An example of a company that effectively uses slogans, however, is General Motors/Toyota (Nummi). In this program the necessary ingredients in Deming's management philosophy of quality, productivity, and pride in workmanship are present and demonstrated. The company's slogan is, "Together we can do it all." This slogan implies employee harmony from top to bottom, with the goal of building a family-like culture dedicated to quality. Nummi has now earned recognition as a world class manufacturing enterprise with a reputation of producing superior quality automobiles with significantly fewer workers compared to American automakers. The Japanese value harmony as much as American managers value profits. Quality and the unending quest for perfection is the ultimate outcome of this philosophy and practice (Rehder, 1988).

Deming is not opposed to goals and sees the need for them, but the accountability for their achievement should be the responsibility of management and not the work force. His approach begins with a shared vision and goal, and it appeals to human need which recognizes the customer as the most important part of the system. Goal setting should be directed to the present and future customer needs. This philosophy provides meaning, vision, and motivation to produce high quality products, which, in turn, provide more success to the organization.

RELEVANCE TO HIGHER EDUCATION

Birnbaum (1988) posits that organizations in higher education differ in the dynamics of the organizational structures, management, and goals when compared to business. He explains that businessmen focus on efficiency and do not understand the unique nature of academic enterprise. He states: "There is no metric in higher education comparable to money in business, and no goal comparable to profits" (p. 11). This difference may help explain the difficulty in quantifying the educational process.

Birnbaum reinforces these differences by questioning how to determine whether or not a core curriculum produces a more liberally educated student than the great books, or how the success of an institution can be determined by the percentage of students graduated, or how many of these students obtained jobs or participated in civic activities.

Deming's desire to eliminate slogans, exhortations, and targets is directed at the production work force. In higher education the work force is administration, faculty, and support services, and its primary goal is to educate students. The educational process cannot permit students to be treated as widgets on a production line, producing so many over a given period of time and at a certain margin of profit. Therefore, due to the nature of the differences between business and academe, the use of slogans, exhortations, and targets is not applicable to higher education as Deming has defined it, which is in terms of the production work force in business.

Application of Slogans

Deming believes that management is responsible for guiding, directing, and providing the best raw materials or tools to produce a quality product. In higher education the raw materials are the students and the outcomes are their educations. Colleges and universities are competing for the best raw materials with the best fit for their particular institution. In order to attract students, the use of slogans in higher education serves a different purpose than telling the work force to do better. The purpose is to establish an image of the institution. Laramee affirms that this image points to the ideals, aspirations, and values espoused in the way the institution lives, teaches, and thinks (1987). Colleges and universities do use slogans effectively to create a perception of the institution. Slogans, such as "All can share in the dream," "The job placement leader," "No other place like it," build the image of institutions on the factors that make their products and their type of education different.

There are approximately 3400 postsecondary institutions offering many thousands of courses; the problem is one of choice. Sowell (1989) wrote: "Choosing a college is often the second most important decision in life—exceeded only by the choice of a wife or a husband" (p. 31). What is a perfect college or university for one student is not the best choice for another because institutions of higher education differ enormously from one another. Litten and Hill (1989) noted that when consumers make choices, it is their opinions and perceptions that drive their decisions.

Shared Institutional Image

With the current increased competition for students, funds, and resources, institutions can no longer afford to be misunderstood, ignored, overlooked, or confused with competing institutions. Deming supports Darwin's law of survival of the fittest, and that the unfit do not survive, saying: "This law holds in free enterprise as well as in nature's selections" (Deming, 1981-1982, p. 22). He further adds that survival depends on how the quality of the product or service is perceived. Key to success, service, and survival is that the institution discover a shared vision that is developed and agreed upon by faculty, staff, trustees, alumni, and students. This image becomes a source of identity which serves to tie the community together, motivate faculty and staff, and affirms what the institution believes and what it does well (Dehne, 1989).

Higher education's process is education, and the product is the knowledge and skills that are gained and put to use. Many demands have been placed on colleges and universities to enhance the quality of education. Deming's philosophy says that quality improvement is usually measured in terms of how well the product or service meets the customer's needs, which in turn is related directly to improving the product's competitive position and market share (Ohio Quality and Productivity Forum Roundtable, 1988).

Topor (1986) asserted that the perceptions of higher education organizations by consumers and constituents are becoming more critical because of the their powerful influence, noting: "The market place is the arena of people's minds—the minds of current constituents and target audiences" (p. 47). He further explains that marketing must weigh each factor carefully and develop an image to reflect those factors. It is the responsibility of the marketer to encourage the customer to connect that image with the institution.

Image Building

Each postsecondary institution has distinct characteristics and organization that include strong and weak points. The focus in marketing is to develop goals or themes which reflect an understanding of the substance of the institution. If these themes are subsequently talked about or publicized extensively enough, they can become reality both inside and outside the institution. Muller posits that to be successful in the marketing process, four fundamental principles should be observed: match the image or identity of the institution with reality, keep the image simple, cater to a diverse constituency, and be repetitive in the oral or written message sent (1988).

There are limitless ways through which colleges and universities can positively promote and advance the image of their institution. Slogans, signs, and posters can communicate an image through various vehicles such as direct mail, public service announcements, tabloids, public speaking, cooperative advertising, and paid advertisements. Muller reports that Johns Hopkins University is using two key themes of "international" and "interdisciplinary" to convey a distinctive profile of that institution (1988). When an institution determines its identity, it must establish that identity with repetition through various media.

CONCLUSIONS

Point Ten of Deming's philosophy is directed toward the worker and contends that slogans, exhortations, and targets do not help individuals do a better job; rather, they only suggest that people do not want to do their best. Management needs to provide the leadership in articulating the vision of the organization. Communication of these directions should be made without exhortations, while being mindful of the ethos of the institution. Leaders promote involvement and participation of everyone in the organization to achieve the mission of the institution. By understanding motivational theory and eliminating fear within the system, the leader opens the way to pride in workmanship by building a system that improves the process.

Deming's position to eliminate slogans, exhortations, and targets for the production work force has limited applicability to higher education due to the nature of the academic enterprise and the composition of the work force. The use of slogans in higher education, however, serves a different purpose than telling the work force to do better. They help establish an image of the institution. Collegiate institutions are competing for the best students, therefore, institutional statements of values and ideals must have substance and not merely contain cliches. Laramee (1987) wrote: "Word, or worse, wind. Yet of these words are attached to something at once transcendent and concrete, their operative value becomes manifest. An evocative, suggestive, and meaningful metaphoric image, with its accompanying connotations and nuances, encourages enhancement by participants and observers, who invest it with projections of their own ideals" (p. 19).

Inputs of quality human resources and effective leadership are essential ingredients to produce a quality product. Deming recognizes that better quality will create a market. He also affirms that organizations need shared visions and goals and emphasizes that goal setting should focus on the needs of the customer. Through educational marketing, institutions should convey images of strengths in services and curriculum programs.

Choices made by consumers are directly influenced by an individual's image of an institution. A common image shared by individuals enables an institution to focus on goals or themes that are unique to it. Marketing should emphasize quality in education, and it requires institutions to understand and to capitalize on the things they do best.

Slogans in higher education can help to create a positive image. Not only can they serve as an effective means for marketing the image or purposes of the institution, but they also help create a cohesive environment within the organization which promotes team building, a sense of belonging, and an awareness of purpose and direction.

Perhaps Deming would be willing to accept the use of slogans for the purposes of marketing the image or mission of postsecondary institutions, provided that the major components of Deming's philosophy are present—leadership to achieve a shared vision and goals, teamwork, and quality input (students) to produce quality education.

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12

Point Eleven: Eliminate Numerical Quotas

By Tess Midkiff

The eleventh point of Deming's "principles for transformation" (1982b) indicates that managers should eliminate numerical quotas. Deming asserts that quotas serve as a "fortress against improvement of quality and productivity" and are "totally incompatible with never-ending improvement" (1982a, p. 71). Since defects are assumed to occur to achieve the quotas, inefficiency and increased costs are inevitable.

Quotas are based on the output levels of an average worker, which means that many workers will not be able to perform at this level while others can easily exceed the stated minimum. But peer pressure usually precludes overproduction from happening. The reality, according to Deming (1982a, p. 71), is that most workers will either fail or underachieve in a quota system, which results in "loss, chaos, dissatisfaction, and turnover."

Deming is even more critical when he discusses piecework, which involves paying workers based upon the numbers they produce regardless of defects. Instead, Deming believes that the worker and the supervisor should know and agree upon what constitutes a defective item and that efforts must be made to reduce defects either by improving the system or improving the worker's ability to produce a quality product (1982b).

In addition to eliminating numerical quotas for the work force, Deming advocates the elimination of quotas for management as well. As examples, he cites arbitrary goals to increase productivity or decrease costs by 10 percent without a method for doing so. In his words, this approach means "managing without knowledge of what to do" or "management by fear" (1982a, 76).

Instead of quotas, Deming believes that greater productivity can be achieved in a system that creates an atmosphere where workers are recognized for doing a good job and where they feel they are valued. Deming argues that quality can be increased greatly by "studying the work to be done and defining the limits of the job" (Walton, 1988, p. 79). If production needs to be increased, specialists should be asked to handle those tasks which fall outside the workers' routine activities or the usual systems' parameters.

Rather than establishing quotas which lower productivity, quality, and morale, Deming recommends that managers try to improve the system and give support to those who need it. He emphasizes the need to create an atmosphere where workers are given recognition and a feeling that they belong. To manage, Deming asserts, "one must lead. To lead, one must understand the work that he and his people are responsible for" (1982a, p. 76). Instead of managing by numbers, a manager should focus not on numerical quotas but on who the customers are and how they can be better served.

ANALYSIS

Deming makes a strong case for the elimination of quotas in business and industry, citing examples which he believes prove that the quota system causes poorer service, greater customer dissatisfaction, and less productivity.

One possible weakness in Deming's approach to numerical quotas is that greater attention might be given to what the specific alternatives are to establishing quotas. Deming speaks generally about "studying the work and defining the limits of the job" (Walton, 1988, p. 79); however, he does not clarify what is meant by these statements. Authors who have commented on his theories (Scherkenbach, 1988; Harris and associates, 1989) do not discuss specifically the concept of defining limits to a job as an alternative to quotas. However, it would seem that "defining the limits" of a job could also have its dangers. While quotas may cause dissatisfaction for workers who fall above or below the expected levels of performance, defining limits to the job could continue to affect the more capable worker. Unless the limits of a job are defined with great care, this process could result in boredom and dissatisfaction for enterprising workers who see more complicated and challenging tasks sent on to more specialized personnel (Walton, 1988) while removing the more challenging aspects of their work.

RELEVANCE TO HIGHER EDUCATION

Deming makes three major recommendations related to numerical quotas: Quotas for workers should be eliminated in favor of an improved system and a more positive working environment; quotas should be eliminated at a management level, which requires concentrating not on quantifiable outcomes but on delivering a quality product; and management should provide leadership based upon knowledge of what workers do.

Quotas for Professionals

Enrollment management is one area of higher education where quotas exist. In the interests of increasing student enrollment and therefore income, admissions officers are often required to meet a set number of contacts per hour or per day. Deming's approach would oppose this requirement because it requires that workers would concentrate more on reaching their quotas than on recruiting qualified students or giving the quality of assistance needed to each prospective enrollee. Many factors influence a student's choice to attend a certain college, such as impressions by peers, quality of instruction, distance of campus from home, the physical appearance of campus buildings and grounds (Topor, 1986), area unemployment rates, and state and federal financial aid policies. To judge an admissions officer's performance largely on numbers of students enrolled would not take into account effort expended or those elements which are beyond their control.

Instead, recruiters might be judged on adherence to carefully constructed admissions processes. Harris and associates (1989) cite as an example the Drake Business School, which previously sought to fill quotas rather than to recruit students who were likely to succeed at their institution. This philosophy resulted in enrolling students who were underqualified and who often dropped out before classes began or shortly thereafter. In an effort to increase "productivity," quotas were dropped at Drake and admissions representatives were judged upon how well they performed a process rather than whether they reached a number, which may not be reachable regardless of their efforts. By eliminating the emphasis on quotas and improving the system for recruiting students, a more positive admission's atmosphere may be possible.

Quotas for Management

Deming's second area of concern involves the elimination of quotas for management, particularly as seen in a management by objectives (MBO) approach. Although higher education did experiment with the MBO approach in the seventies, a literature search of the eighties indicated little current interest in its application to colleges and universities. This finding supports Deming's assertion that such an approach is not advisable for business and industry.

Recent initiatives in higher education focus more on quality and accountability, or in Deming's words, on "improving the system." An approach to quality assurance was outlined in "the Mortimer study" (Study Group..., 1984) which recommended that collegiate institutions should be "far more specific about their objectives" to assure quality although all outcomes cannot be specified in a way that is quantifiable (p. 39).

This concern with quality is also mentioned in Boyer's publication entitled *College* (1987), in which he emphasized that quality institutions must be concerned about outcomes. Both publications stress the need for colleges to state objectively what they will teach students, to evaluate through data collected and assessment instruments that indicate results, and then to allocate resources to departments and programs to increase the ability of the institution to achieve these aims. This approach is similar to Deming's recommendation to improve the system and to give support to those who need it. Even though attention to outcomes are stressed by the Mortimer and the Boyer reports, outcomes are not discussed in terms of numbers to be reached but as part of coordinated efforts for improvement, which can result in increased student enrollments and retention.

Leadership

Deming stresses the need for managers to be leaders, and he emphasizes that to lead they must understand the nature of their responsibilities and those of their employees. This concept applies equally well to higher education although there are differences in the types of leadership required. Even though college administrators can impact policies by their actions, their power is limited and comes not so much by using power as by using persuasion—by a willingness of others to be "led" (Birnbaum, 1988). Traditionally, business executives have taken a more directive managerial approach, but even in the corporate world a more collaborative, less hierarchical style of leadership is evolving (Peters, 1987).

The nature of collegiate leadership responsibilities are no longer as simple as in earlier times. America's first colleges were based upon "a vision of coherence," according to Boyer (1987), but the current and expanding collegial base for many postsecondary institutions is so broad and so specialized that a common vision is much harder to achieve. As

Boyer noted, "We found at most colleges in our study great difficulty to the point of paralysis, in defining essential purposes and goals."

CONCLUSIONS

Deming's major premises on establishing quotas appear to be as justifiable in higher education as they are in corporate settings. The establishment of quotas would seem to have an ill effect on morale and productivity of both professionals and management in collegiate settings.

In terms of Deming's recommendations regarding leadership, some differences that have been discussed in the leadership styles that are conducive to success as a corporate CEO and a university CEO need to be kept in mind. The relatively open collegiate governance systems and the collaborative nature of collegiate decision making render his leadership recommendations more difficult to apply in campus settings.

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13

Point Twelve: Remove Barriers That Rob People of Pride of Workmanship

By Judy E. Shonebarger

One of Deming's points for improving quality in the workforce is to remove barriers that rob people of pride of workmanship. Deming advocates listening to workers and to their problems. He believes that workers understand quality because their jobs depend on the acceptance of their product in the marketplace. Workers frequently are hesitant about voicing their views due to past experiences when their requests were ignored, or worse, held against them (Walton, 1986).

Many barriers can inhibit pride in workmanship. Workers may not fully understand their jobs due to inadequate and/or insufficient training or education. They may have been trained by another employee who had weaknesses or indifferences that were passed on to new employees. Also, equipment and supplies necessary for performing the job may be defective or nonexistent or outdated.

Deming believes that workers are not primarily at fault in shoddy workmanship and that quality is primarily a function of human commitment (Krantz, 1989) and top management. There are handicaps in production that workers must overcome in order to improve quality, productivity, and competitiveness—barriers that impede the worker's ability to be proud of his or her work. The system also can impede a worker's pride in workmanship and this point has been addressed in previous chapters (Deming, 1986). Deming believes that the barriers to pride in workmanship must be removed from both the managers and the hourly workers, saying that the annual rating of performance is the barrier impeding the manager's pride in workmanship.

ANNUAL RATING OR MERIT SYSTEM

Several students of Deming have interpreted the removal of barriers for pride of workmanship to include the elimination of annual ratings or the merit system for promotion (Gabor, 1988; Greenwood, 1988; Modic, 1988). Modic (1988) quoted Deming as saying that the appraisal of people is a destroyer of people and that ratings place the onus on the individual, when 85 percent of the problem is attributable to the system in which individuals work (p. 89).

Deming (1986) writes that "It [annual rating system] nourishes short-term performance, annihilates long-term planning, builds fear, demolishes team-work, nourishes rivalry and politics" (p. 102). The management by objectives system (MBO) and other annual review systems focus on the end products and not on methods to help people achieve designated ends. Merit rating rewards employees who do well in the system and not those who try to change the system or make the system work better.

Scherkenbach (1988) interprets the performance appraisal system as one that fosters mediocrity and reduces initiative or risk-taking. Objectives are either set too high and are impossible to achieve, or are set so low that everyone can be a winner. Employees are reluctant to take risks to overcome these barriers for fear of replacement or reassignment. The emphasis, according to Deming (1986), should be on principles of leadership, and he advocates that good leadership should replace the annual performance review.

ANALYSIS

Barriers to pride in workmanship can greatly diminish the feelings of job commitment by the workers. Individuals need a feeling of pride in their work to develop commitment to the organization. In addition to economic necessity, pride keeps employees on the job when it is repetitious and monotonous. Deming contends that quality performance cannot be achieved unless the workers on the line understand their jobs and have pride in their work. In many situations, workers are asked to produce an item according to a designated level of quality on one day and are then asked to produce the same item at a different level of quality on the next day. Confusion develops and pride in workmanship is impeded.

Employees in health care institutions, for example, perform many repetitious tasks. Without pride in their work, these tasks lack meaning, eventually their work suffers, and ultimately the quality of patient care diminishes. In the past several years, some groups of nurses petitioned for improved working conditions. Removing the barriers to pride in workmanship would have solved many of their problems. When nurses are asked to care for patients without adequate supplies or with supplies that are defective, their work becomes more difficult. In some instances, if the materials are defective, patients' lives may be at risk.

For many years, nurses were asked to begin work without the proper orientation to that institution. Nurses are trained as generalists, yet they are still expected to respond as specialists in many situations without additional education. Added to these problems, the barriers of inadequate staffing and unacceptable equipment diminish pride in workmanship in the nursing profession.

Performance appraisal in health care institutions has taken on the image of business and industry. Tasks are very clearly indicated on the job description and the employee rating forms follow the guidelines on the job description. Employees are rated by their immediate supervisor on an annual basis for promotion and for merit increases. Managers usually have been trained in performance appraisal and, in many instances, have been told about quotas for each level of wage increments. Employees evaluated under this system learn very quickly about the quotas, and, in turn, motivation for improvement suffers.

Cole points out that the methods that are described in Walton's book are not the ideas that Deming taught the Japanese, but principles that he learned while watching the Japanese develop. Clarifying his statement, Cole indicates that this observation does not denigrate Deming's ideas and that he should be given enormous credit for learning all of his life (1987, p. 50).

Baillie (1986) notes that the Deming approach is more difficult than first impressions indicate. He stresses that the involvement of top management is essential. Many companies have instituted some of the Deming management techniques, like quality circles, without the same level of success achieved in Japan. Baillie said that many American firms have hired Deming to learn about quality control. The confusion centered around the quality circle issue in management stems from the methods in which they were instituted and utilized. Deming was quoted by Baillie as saying that many companies were instituting quality circles because management wanted a lazy way to avoid the task of improving quality and productivity. He contended that quality circles alone are not quality control (p. 16). Some companies have instituted quality circles as a method for removing barriers to pride in workmanship. Properly used, quality circles can allow free thought and discussion without fear of reprisal. Problems that workers define through the quality circle method can be taken to managers for further consideration and action. Quality circle members, as a rule, have little or no power to institute change by themselves (Lawler, 1987).

RELEVANCE TO HIGHER EDUCATION

"Remove barriers to pride of workmanship" can be applied to higher education in a number of ways. Deming would eliminate annual performance appraisals and give feedback on a more regular basis. He indicates that focusing on the individual promotes the loss of teamwork and that 85 percent of the time the problems that individuals encounter are attributable to the system rather than to individuals (Modic, 1988, p. 89). The problems related to faculty evaluation in postsecondary education are well publicized. Stroup (1983) wrote: "Students insist upon evaluation of faculty; legislators and the public believe it should be required and more rigorous, and boards of trustees and system administrators expect systematic, thorough well-developed evaluation policies" (p. 47). With so many people interested in performance appraisal, it is understandable why pride in workmanship could be damaged.

Motivation

Faculty members are cognizant of rating systems and their effects on promotion and tenure. Motivational patterns have been studied in relation to the importance placed on the teaching role. Finkelstein (1984) found a curvilinear relationship between years of teaching experience and ratings of teaching effectiveness. These patterns indicate that individual teaching goals and classroom practices are individually motivated and that these practices change over time. After reviewing many research studies, Finkelstein concluded that faculty appear to be most influenced by internal standards of professional performance. The individual faculty member's ability to translate this internal motivation is determined by his or her work assignment.

Eliminating performance evaluations could be considered by some individuals to be a step backward. Most postsecondary institutions have worked diligently to develop policies and procedures for evaluating faculty performance. It would seem paradoxical to follow Deming's procedure and eliminate the "appraisal of people" since most universities have adopted well-defined methods for faculty evaluation. There is inadequate evidence that Deming's suggestion of eliminating annual employee performance ratings would be effective in collegiate settings, or would result in improved performance.

Leadership

Deming focuses on leadership as the solution for employee annual review. He believes that enlightened leadership with prior knowledge of the obligations, principles, and methods can promote the development of pride in workmanship. His leader would develop a collegial relationship with faculty members whom he or she knows well and provide leadership on a daily basis. The leader would determine the individual's abilities and weaknesses and provide opportunities for personal growth and development (1986).

Birnbaum (1988) argued that the call for leadership is easy but the definition of leadership is obscure. Despite numerous studies on leadership there is still no agreement on the definition. Birnbaum wrote that "the study of leadership in colleges and universities is more difficult due to the dual control systems, conflicts between professional and administrative authority, unclear goals, and the other unique properties of professional, normative organizations" (p. 22).

Faculty Evaluation

There is strong leadership in some postsecondary institutions and this leadership meets some of the principles suggested by Deming in this chapter and others. Several methods for faculty evaluation have been developed over the last decade. Some are complex and involve numerous processes which are time consuming; however, with the decline in the population of 18-year-olds and the increased consumerism of today's students, some system for performance appraisal is needed to help ensure quality. It may be possible to reduce psychological barriers to the process of evaluation, thereby allowing faculty members to develop greater pride in their performance.

Harris and associates (1989) suggested several methods for incorporating Deming's methods in the management of postsecondary education to improve quality for the students, faculty, and administration. They do not advocate, however, eliminating performance appraisals, but note that the assessment of teaching can provide a measure of quality assurance.

Pride of workmanship has other applications. For example, the faculty member may be teaching in a large classroom that has environmental barriers such as crowded seating, poor acoustics, or unpredictable variations in the temperature. Deming believes that the person on the line understands his or her job better than management, particularly if the manager has never done the work. The importance of understanding teachers' needs is a crucial quality of good administrators, and can significantly enhance pride of workmanship in faculty members or nonacademic personnel.

Another barrier that can negatively impact upon pride of workmanship is professional mobility. Generally viewed as a means for professional advancement, Deming believes that "job-hopping" promotes a barrier that can destroy loyalty to the organization and reduce the feeling of pride that comes with commitment to an institution. But professional mobility is an indigenous aspect of academe, allowing ambitious and talented individuals to better themselves, which is consistent with our national spirit of entrepreneurship.

Quality circles could be instituted in universities as a means for helping remove barriers to pride of workmanship. Problems perceived by the faculty or assessed by committees of students and faculty could be reviewed and analyzed using the quality circle system. However, Deming does not promote the use of quality circles as a means for removing barriers. Deming (1986) believes that these methods along with other employee participation groups are sometimes smoke screens that mask the true problems. For quality circles to be successful, the members need to feel non-threatened, under no compulsion to reach any particular conclusion, and believe that their results will be openly and sympathetically received by senior administrators.

CONCLUSIONS

The removal of annual performance appraisals is the major recommendation made by Deming that has some application to higher education. The leadership role of senior administrators is advocated as a means for improving employee performance, morale, and promoting pride in workmanship. If academic leaders provide faculty members with direction and open attitudes that are needed for individual, self-motivated goal setting, the need for annual performance appraisals could be reviewed and streamlined or even eliminated. Barriers that affect an individual faculty member's pride in workmanship could be identified and shared with administrative leaders and solutions could be identified. Administrators in higher education have not looked seriously at Deming's approach to performance evaluation. It is time that they should.

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14

Point Thirteen: Institute a Vigorous Program of Education and Retraining

By Stephen E. Miller

"What an organization needs is not just good people; it needs people that are improving with education" (Deming, 1986, p. 86). Everyone in the organization has responsibilities toward improving the system, and most individuals need to be lifelong learners. With an average of five position changes in one's career as well as the need for constant upgrading of in-the-position skills, this age of fast moving science and technology has enhanced significantly the importance of coping with change.

Deming recommends that organizations encourage and make available a wide range of educational and self-improvement activities for employees. These activities need not be related directly to employment, since growth in any area makes for better and happier employees (Harris and associates, 1989). Programs should be designed in a manner that provides every employee with opportunities to acquire the new knowledge and skills that are required to cope with changes in methods of production, style, model, and, if advantageous, new machinery (Deming, 1981). As organizations adopt the Deming philosophy with hopes of charting a course toward continuing improvement, management will also be expected to play a more significant role in providing opportunities for employee development. Scherkenbach (1988) concurred with Deming's assertion that management has an overriding responsibility to invest in its most important asset, its people. Management also must make continuing self-improvement a priority by recognizing the responsibility for its own continuous learning and relearning.

EDUCATION, RETRAINING AND SELF-IMPROVEMENT

Personnel development specialists would support Deming's "systems approach," and they have traditionally designed programs to enhance the quality of organizational life by increasing individual, group, and system effectiveness. Castetter (1981) described personnel development as being pre-eminent among the processes designed by the organization to attract, retain, and improve the quality of employees. The process of personnel development is vitally linked to personnel planning and, as such, calls for a sound human resources plan which includes developing key personnel skills and promoting employee self-development.

Goddard (1989) wrote that human resources are achieving parity with other forms of corporate planning, and that people are becoming a fundamental factor in corporate vitality and survival. Naisbitt and Aburdene (1985) predicted that as America moves into the 1990s, only organizations recognizing the importance of good human resource management will survive. Attempts to restructure organizational policies that encourage employee improvement is needed and must recognize that the best and brightest people will gravitate toward those organizations that foster personal growth. Deming cautions that managers should not abrogate their responsibility for developing people by placing that responsibility in the hands of human resource professionals. Management must be involved.

ACQUIRING NEW SKILLS AND KNOWLEDGE

Large sums of money are being spent yearly by public and private-sector employers for a wide range of instruction intended to maintain the competence of their employees. Most approaches to employee development are more likely to be focused on "knowing how" (training) than on "knowing why" (education). Usually the goal is to prepare employees as quickly and as efficiently as possible to cope with some change or innovation. Though training of this type maintains the competence of employees, it is primarily for the benefit of the employer and not the individual. Organizations that tend to be more concerned with productivity and performance while filling immediate skill needs in the shortest possible time, will contribute to the obsolescence that has plagued the manufacturing industry in this country. A greater emphasis on education rather than on ad hoc training will be more cost effective in the long run.

Organizations increasingly realize that if they want their employees to have the insight and ability to weigh alternatives, they need to provide long range and broader educational approaches (Lynton & Elman, 1987). Workers in the 1990s will need the knowledge and skills required to perform new and expanded tasks. "Those that insist on entering the twenty-first century with the tools and techniques of the twentieth century will almost certain suffer" (Watts, 1984, p. 101).

THE NEW MANAGEMENT CHALLENGE

Deming contends that management tends to treat people as commodities, and Waterman (1987) wrote that people are treated as "factors of production" managed in much the same way as machines or capital. People are growing intolerant of this practice. Fortunately, management is coming to realize that the individual is the only true source of renewal in an organization.

In a business world turned topsy turvy by international competition, swiftly changing technology, and by a more highly skilled workforce, the manager's job is becoming more complicated. New roles for managers include those of leader, communicator, team member, teacher, learner and career consultant. One of the manager's newest and least acknowledged roles is that of learner because he or she is also the principal conduit for pushing new knowledge up the line. Deming (1985) asserts that advances in competitive position will have their roots in knowledge; therefore, management cannot be exempt from going through new learnings.

RELEVANCE TO HIGHER EDUCATION

Colleges and universities are labor intensive organizations, and they usually recognize human resources as their most valuable asset. Comprehensive professional development programs are designed that involve all administrators, faculty, and staff personnel. Everyone is a learner, and everyone needs periodic professional development and personal renewal. This chapter examines Point Thirteen in the context of professional development for faculty and administrative staff.

Faculty Development

Faced in the 1970s with declining and changing enrollment patterns, increased demands for accountability, declining resources, and a faculty adversely affected by these and other conditions, many colleges and universities became more serious about faculty development as an institutional responsibility. Current demographic studies are predicting college-age populations in the next decade will diminish until about 1996. At the same time, some academic areas likely will have difficulty in hiring enough qualified faculty to meet student demands. In general, existing faculties will have grown older and will have less job mobility (Eble & McKeachie, 1985). Bowen and Shuster (1986) estimate that by 1995, a significant increase in new faculty members will be needed to replace those who will be retiring.

If we accept the notion that institutional vitality and effectiveness is directly linked to the quality, resourcefulness, and vigor of faculty members and that the human resource skills evolve over time, then institutions can monitor faculty to assure that optimal benefit is being derived from this vital human resource. To enhance quality in the 1990s, effective use of faculty resources is crucial.

Education, Retraining, and Self-improvement

Today's college faculty members can anticipate another ten years or more of active service; therefore, this group should be helped to adapt to the expanding missions of their institutions as well as to remaining current in their disciplines. Lynton and Elman (1987) suggested that institutions remove some of the existing barriers to such activities by assisting faculty in a variety of ways. First, clear commitments to planning and change by the CEO, CAO, and faculty leadership are the most important factors in bringing about redirections of institutional energies. Tenured faculty may need to broaden their disciplinary perspectives and to gain a better understanding of the potential applications of their academic areas. Second, faculty can benefit from more interactions with practitioners. The effectiveness of many degree programs can be enhanced by involving more individuals who have practical experience. Practitioners and faculty could work together by applying complementary skills to many situations. And third, administrative leadership can foster the exchange of qualified professionals between the campus and external places of work. Efforts are needed to increase the appropriate use of practitioners as full-time or adjunct faculty, but also to encourage tenured faculty to spend time in off-campus settings. This approach can be fostered by developing short-term leave policies and by exploring other possibilities of formal exchange agreements between private industry and public agencies.

A perennial responsibility of all faculty members is to remain abreast of the latest developments in their respective fields. The question becomes, "How much is the administration's responsibility versus that of the individual?" Deming argues that both share equally in this endeavor. Ryder and Perabo (1985) wrote that faculty development should be initiated by the individual; that is, the desire for change, growth, and development must come naturally from the faculty member. While an institution may publicize opportunities and provide funding and released time for appropriate activities, the real impetus for growth and renewal is a private, personal, and natural desire for coninual improvement. Self-initiated professional development seems especially important for those faculty members who have reached middle age and beyond. This approach is consistent with Deming's contention that people should not be afraid to take a course, and that everyone has a responsibility to study, learn, and improve. "No one, no matter how good, should be exempt from participation in faculty renewal activities, for the moment one stops growing as a person or a professional, he or she begins to die. Growth ought to be constant for everyone throughout life" (Nelson, 1983, pp. 7-71).

Acquiring New Knowledge and Skills

Colleges and universities need to undergo serious changes if they are to meet successfully the challenges placed upon them by evolving societal needs. At the heart of this reform and essential to its success is active participation by the faculty. The major challenge will be to place the faculty at the center of the change process, and to provide appropriate incentives and rewards to make it possible for them to acquire the knowledge and skills needed to perform new and expanded tasks. This point is at the heart of Point Thirteen and it offers the best hope of providing symbiotic relationships between industry and higher education.

The wealth of books and articles about the knowledge explosion has created a general awareness of the extent in which our economy has become knowledge intensive. The importance of knowledge manifests itself in a number of ways including the influx of technological innovations, the effective and rapid technology transfer and knowledge diffusion, and the proliferation of data that places a growing premium on the aggregation, synthesis, and interpretation of knowledge.

Adapting to Change in Model, Style, and Machinery

The instructional task will be more difficult in the future, for several reasons. First, faculty must remain up-to-date on the basic research in their field. Second, as knowledge moves closer to application, it becomes increasingly problem-oriented and multidisciplinary; therefore, faculty members need clear understandings of the relationships between their own disciplines and other cognate areas. They will need throughout their careers to transcend narrow specialization if they are to be active in the application of knowledge and if they are to help students to become more than narrow specialists. However, for those few researchers who are at the frontiers of knowledge, narrow specialization will remain an essential element in creating new knowledge. Third, they also need knowledge and experience in the external world to understand better the applications of new ideas and methodologies, the relationship of theory to practice, and what can be learned from experience. Finally, whether through formal instruction, consulting, or general information dissemination, the faculty need to help others understand complex issues. Their students will span a wide range of ages and backgrounds, and thus faculty will increasingly require a sensitivity to a variety of learning modes.

The Role of Administrative Leadership in Faculty Development

Senior collegiate administrators need a clear vision of their institutional goals and must be able to communicate these to others, including faculty members. Deming (1989) contends that a company's output can be no better than the quality of the top leadership, and that the people working in organizations produce products and services that are designed through management's foresight or lack of it. As we move into the 1990s, the education, skills, and abilities of faculty members will need to be improved to cope with rapid societal and knowledge changes. Administrative leaders need to create opportunities for faculty members to maintain interest, challenge, and joy in their work.

Professional Development for Administrators

As the management of colleges and universities becomes more sophisticated and competitive, the need for personnel with both academic and management training will be more evident (Fife, 1987). Historically, higher education has depended very largely upon on-the-job training to develop its institutional leaders. In the future, this approach will not be sufficient because the best managed institutions will be able to maximize uses of limited resources; therefore, those institutions that make concerted and sustained efforts in the area of professional development will be the ones that are most likely to flourish.

Professional development programs can provide stimulation and new ideas to administrators, no less than can be the case for faculty members. Administrators need to be lifelong learners in order to bring new ideas and approaches to their work. By the time many administrators reach mid-career, their experiences will have been gained in a quite different world. This circumstance suggests the need for continuous, professional development as a way to keep abreast of new developments, trends, and issues. McDade (1987) cited two ways in which administrators can broaden themselves through professional development. First, professional development programs provide an opportunity to scan the environment, to explore external trends, events, and activities. These opportunities enable administrators to anticipate better future problems and to take advantage of forecasted trends and events. Second, professional development programs provide opportunities to understand better the activities of other areas of the institution and the world in which administrators live, while preparing administrators for more complex roles in the institution and its environment.

CONCLUSIONS

Postsecondary institutions are interested in the professional needs of their faculty and administrators. Those who heed Deming's advice to have available a wide range of educational and self-improvement activities will be ensuring their own growth, enhancing institutional quality, while helping also to contain costs in the long run. Institutions wishing to adapt to the educational imperatives of the 1990s need to capitalize on the natural flexibility and growth potential of their human resources. By influencing the attitudes, skills, and behavior of faculty members and administrators, higher education institutions can revise their programs, extend their services, and generally enhance their overall effectiveness.

Collegiate institutions are labor-intensive organizations. To provide optimal educational opportunities, they need to attract, retain, train and educate, and retrain and re-educate faculty. A strong faculty development program can enhance this process by having stated entry-level competencies and on-going faculty development efforts which enhance those competencies.

Faculty members need to become more involved in their own development efforts. They can acknowledge the need for renewal, learn about the needs of their institution, and then help to design and support development efforts. They will be expected to think more broadly about what constitutes an academic role and then take initiatives to diversify their skills and be able to apply them more effectively beyond academia.

Management development is a major effort in industry and business, government, and nonprofit sectors. Many organizations believe it is an essential investment in individual development, planning, organizational development and change, and human resource development. This rationale is no less true for higher education administrators who need to be significantly and visibly committed to, and involved in, learning and renewal. Stronger efforts to become acquainted with employee needs while encouraging personal and professional development opportunities will be essential components of strong administrative leadership in the 1990s.

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15

Point Fourteen: Take Action to Accomplish the Transformation

By Joan P. Moser

Deming sees his 14th point as the culmination of the other 13 points. He believes: "Management will have to organize itself as a team to advance the thirteen other points" (Walton, 1986, p. 86). In his interpretation of Deming, Scherkenbach (1988) titled his chapter on the 14th point: "Put everybody to work to accomplish the transformation" (p. 136). When organizations continually use the Deming method to improve their outcomes, top management involvement and use of statistical methods are critical aspects to accomplish the transformation.

TOP MANAGEMENT INVOLVEMENT

Deming focuses on the role of top management in achieving this point. Without their initiative and continued support, the transformation cannot occur. It is the system and not the workers who are in error, and only senior executives can change the system.

Deming consistently advocates a definite plan of action (Walton, 1986). The plan begins with top management agreeing to the new philosophy. They must plan, do, check, and act (the PDCA System) on each of the other 13 points. Mutual understanding of the plan by all members of the organization and constancy of purpose are the keys to successful transformation. Top management must have the courage to act in spite of external and internal pressures not to change. Many executives will need to break with tradition and the status quo, no matter how difficult this might be. Continuous improvement requires risk-taking by managers, thus managers become leaders. Skills in leadership must dominate as an organization makes the transition (Scherkenbach, 1988).

Also needed is a critical mass of change agents who believe in the transformation and who are willing to learn the Deming Management Method. Many times in organizations, the vision of top management is short-circuited by middle managers and first-line supervisors. The message is restricted or altered and the focus is on outcomes and not processes. The critical mass must be willing to overcome these obstacles and be willing to implement the action plans.

Finally, Deming's action plan involves the Deming Cycle. The Deming Cycle, which Deming calls the Shewhart Cycle, needs to become a way of life, constantly improving the process. The Cycle involves the effective use of statistical methods in finding causes to improve methods and procedures. Commitment, action, change strategies, and data analysis are the key ingredients to a successful Deming transformation of an organization.

THE DEMING CYCLE

Deming gives credit to W. A. Shewhart, a former member of the technical staff of Bell Telephone Laboratories, for developing the theory which espouses using statistical concepts and methods to set the limits of quality control. In 1931, Shewhart, in *Economic Control of Quality of Manufactured Product*, wrote: "Deviations in the results of a routine process outside such limits indicate that the routine has broken down and will no longer be economical until the cause of trouble is removed (p. vii). Deming wrote in the foreword of another of Shewhart's books: "Most of us have thought of the statistician's work as that of measuring and predicting and planning, but few of us have thought of the statistician's duty to try to bring about changes in the things that he measures" (Shewhart, 1939, p. iv). Fifty years later, Deming still advocates Shewhart's theory as the methodology, which is using statistical data to improve the quality of goods and services. Deming translates this methodology as the Plan, Do, Check, Act system, (PDCA system) and describes it in four steps:

> Step 1. *Organize an appropriate team which can study a process and decide what change might improve it.*
>
> Step 2. *If enough data is not available, tests or studies need to occur with support from the group. Make the necessary changes, preferably on a small scale.*

> Step 3. *Observe the effects.*
>
> Step 4. *What did we learn? Repeat the test if necessary, perhaps in a different environment. Look for side effects (Walton, 1986, p. 86).*

PDCA SYSTEMS

A transformation model that follows the Deming cycle might flow as follows: Someone—management, a team, or an employee—defines a project. The project could be prompted by a customer complaint, a defective product, and/or employee dissatisfaction. Next, data that measures effectiveness and process inputs is collected. Brainstorming, nominal group techniques, flow charts, run charts, check sheets, control charts, measurements, and error analyses are some ways this data can be gathered. Focus groups, surveys, and interviews are also effective means of gathering data.

After the data is collected, it is analyzed using techniques such as cause and effect diagrams, flow charts, Pareto charts, trend charts, histograms, and scatter diagrams. If the results indicate the process is not stable, not consistent, and/or out-of-control, managers should identify and act on the special causes. If the process is stable and in-control, managers should analyze the measures of process inputs. Perhaps it will be necessary to gather more data. The team can then identify and remove the causes of out-of-control conditions. Action taken might include retraining, fixing the equipment, using a new supplier, and/or reducing the chances of reoccurrence.

After generating improvement and acting on common causes (people, machines, methods, materials, environment), the team continues to monitor the results of actions taken on control charts. If no improvement results, the team returns to the beginning of this step. If improvement does result, actions are taken to reduce the chances of reoccurrence through retraining, rewriting procedures, or whatever is necessary.

Project evaluation is comparable to Deming's third action step. The team would review current levels of performance of the system against original measures of effectiveness. Other results might be improved communication, productive teamwork, and better training. Also, system barriers should be reviewed, corrected, and evaluated.

Strategizing for continuous improvement is the final step in the system. If system barriers are identified in step three, the team should be able to make recommendations to eliminate them, including a continuous plan to reduce variation and to improve the system. The process is on-going. Another area of opportunity or project for improvement should be selected and the process repeats itself.

RELEVANCE TO HIGHER EDUCATION

At first glance, Point Fourteen might appear to be a system only applicable to the business world, especially the manufacturing process. It might seem difficult to take Deming's Management Method and implement it in a postsecondary institution. This is not true, however. Some colleges and universities are using quality models, customer (student) satisfaction reports, and process flow charts to determine the best ways to accomplish their missions. Deming's emphasis on top management involvement and the use of statistical methods for continuous improvement can have application in higher education (Zemsky & Stine, 1989).

Top Management Involvement

Postsecondary CEO's should provide the leadership for their management teams. Deming (1989) discusses a leader's ability to create an interest, a challenge, and a joy in work for all employees. A successful leader tries to "optimize the education, skills, and abilities of everyone and helps everyone to improve" (p. 16). Deming declares that unless top management gets permanently involved in quality, nothing will work (Main, 1986). "The leader works toward these goals by accepting the responsibilities of leadership—responsibility for improving the system and finding out which people deserve special attention and giving them the recognition or help they deserve" (Deming, 1987, p. 37).

College and university CEO's thusfar have given very little thought to the Deming cycle for improvement. Their position demands for community involvement, board of trustees' mentoring and liaison, financial management, and "putting out fires" afford little opportunity for presidents to direct their attention to day-to-day improvement. However, a sense of purpose, careful listening, and a focus on people are the qualities of successful presidents (Boyer, 1988-1989). Fundamental characteristics of good leadership depend on a leader's ability to clearly communicate his or her goals and a shared vision. Deming titles this concept, constancy of purpose. Boyer (1988-89) wrote that "the future is inextricably linked to education, but we need leadership that can keep communication open, keep the focus on people, and work creatively on new ideas" (p. 9).

The concept of change applies to effective leadership and continuous improvement. Organizational dissonance is a by-product of ambiguity, and all change processes produce a certain amount of ambiguity (Koolhaus, 1982). Managing ambiguity is critical for successful organizational transformations. Morgan (1988) wrote about the importance of managers and leaders being proactive about the future and anticipating some changes that are likely to occur.

Executive leaders and managers who thrive on innovation and change are the visionaries who lead successful organizations (Foster, 1986). Some collegiate presidents tie their futures to obsolete technologies and methods and forget about the importance of creativity and research in maintaining a competitive edge. Successful transformations will require CEO's who demonstrate dynamism, decisiveness, and sufficient organizational savvy to know when and how to change their organizations.

Applying Deming

The Deming cycle advocates commitment, action, change, and data gathering. These four factors in any plan of action can provide a new direction for continued improvement of collegiate institutions. Exactly how these elements would be applied in any particular setting is a matter of subjective adjustments. For example, data gathering could come much earlier.

Commitment

American higher education should develop a greater commitment to quality education and customer satisfaction. Athletic scandals, drug problems, student loan defaults, taxpayer unrest, an increasingly antagonistic press, more activist governors and legislators, and the widening public perception of poor quality are problem areas that institutions need to transform. Zemsky and Stine (1989) observed that members of collegiate boards and executive committees have had difficulty in keeping focused, insisting on collective proclamation and lacking commitment to stay the course.

Action

Deming (1982) wrote that "service organizations need quality control even more than business or industry" (p. 235). He included education in his definition of a service organization, and said that because many people are engaged in service, action is necessary to provide better quality and productivity. A common denominator is that mistakes and defects are costly. Consider the mediocre student who is allowed to graduate with poor communication skills, inability to think critically, and lacking interpersonal relation skills. An example is the multifarious approach to educating student nurses. Student nurses can attend either a two, three, or a four-term training program. After graduation, regardless of the number of years of education, they all qualify to take the same licensure examination. The outcomes are a confused public and often poorly prepared and disillusioned students.

Successful collegiate application of Deming requires the CEO's to develop a structure that can apply constancy of purpose to operationalizing the system. This structure may require guidance from an experienced consultant, but this individual cannot take on obligations that only management can carry out (Deming, 1982). Deming told the Japanese they could "take over the world" in quality products and productivity if they followed his advice. He would guarantee the same result for quality service initiatives.

Change

Perhaps the most complex of the factors that are needed for creating an organizational transformation are the processes of change. Miller (1988) noted some unique and complicating issues regarding change in higher education that date back to the mid 1960s. Complexity of most assessment innovations, professional sensitivity toward assessment, political sensitivity, and the commitment of time challenge the function of Deming's Cycle. Without assessment, the cycle of planning, doing, checking, and acting cannot be completed. In order to overcome these difficulties, change strategies need to be aggressively implemented.

Many models or strategies for bringing about change have been developed and practiced with varying results. Miller (1988) reviewed five models: Lewin's unfreeze, change, freeze approach; Ryan and Gross's classical study of hybrid seed corn; Rogers' adaptation process; Blake and Mouton's industrial model; and another industrial model developed by Kirkpatrick. Dyer (1984) developed strategies to change organizational culture through the use of open system mapping. Morgan (1988) presented a step-by-step program for helping top managers cultivate a mind set that changes behavior to deal effectively and proactively with the issues of change. Deming (1989) has written that quality improvements require change, and successful change for continuous improvement is management's responsibility.

Data Gathering

The positive transformation cannot be accomplished without meaningful data. Koolhaus (1982) has noted that all change strategies involve using data to solve problems, which compliments Deming's strategy of plan, do, check, and act. Data gathering can be accomplished in many ways. The institution's research office could gather and analyze data for numerous committees and team projects. This office could assist in determining the best information to collect and the most efficient and accurate manner for collecting it. The research office could function as a clearing house to avoid repetitious surveys and efforts in data collecting. It is not enough, however, to just collect data; rather, they must be analyzed, studied, disseminated, used, and evaluated.

CONCLUSIONS

This chapter focused on the Deming cycle and how it can be used in higher education. Colleges and universities have many of the components of an effective, continuous improvement model. A vigorous commitment of top management and a systematic approach to implementation of an action plan based on the analysis of necessary data are key components of the Deming Management Method.

Many colleges and universities are trying to overcome problems and change in order to deliver a higher quality education to their students. Other colleges and universities are not. Lack of commitment, ineffective leadership, focus on status-quo, and inefficient data gathering are some causes for collegiate mediocrity. The Deming Management Method could improve postsecondary institutions and help accomplish the vision, the plan, and the action. Transformations are difficult, but using the Deming Method can make it easier and possible.

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16

Cardinal Diseases and Obstacles

By Richard I. Miller

The 14 points that are given in the previous chapters are changing in words and modes of expression, but the basic concepts underlying them have not changed. As mentioned in the text, Deming himself is more or less constantly changing the words and expressions.

But no systematic attention in the previous chapters has been given to another dimension of Deming's work—the seven cardinal diseases and obstacles. Several of these points have been mentioned individually in the book but their systematic presentation did not fit into any one chapter; hence, a skeletal picture of them is included here, drawing heavily upon Deming's 1986 book, *Out of the Crisis.*

DEADLY DISEASES

1. *Lack of consistency of purpose to plan product and service that will have a market and keep the company in business, and provide jobs.*

2. *Emphasis on short-term profits: short-term thinking (just the opposite from consistency of purpose to stay in business), fed by the fear of unfriendly takeover, and by push from bankers and owners for dividends.*

3. *Evaluation of performance, merit rating, or annual review.... (pp. 97-98)*

The annual performance review sneaked in and became popular because it does not require anyone to face the problems of people. It is easier to rate them; focus on the outcome. What Western industry needs are methods that will improve the outcomes. Suggestions follow.

1. *Institute education in leadership; obligations, principles, and methods.*
2. *More careful selection of people in the first place.*
3. *Better training and education after selection.*
4. *A leader, instead of a judge, will be a colleague, counseling and leading his people on a day-to-day basis, learning from them and with them. (p. 117)*
5. *Mobility of management: job hopping.*
6. *Management by use only of visible figures, with little or no consideration of figures that are unknown or unknowable.*
7. *Excessive medical costs.*
8. *Excessive costs of liability, swelled by lawyers that work on contingency fees. (p. 98)*

OBSTACLES

Deming lists a number of obstacles besides the deadly diseases, although he contends that "most of them are easier to cure than the deadly diseases" (p. 126). The obstacles are:

- *Hope for instant pudding.*
- *The supposition that solving problems, automation, gadgets, and new machinery will transform industry.*
- *Search for examples. Improvement of quality is a method, transferable to different problems and circumstances. It does not consist of cookbook procedures on file ready for specific application to this or that kind of product.*

- *"Our problems are different." "They are different, to be sure, but the principles that will help to improve quality of product and of service are universal in nature." (p. 130)*

- *"Obsolescence in schools." Deming is referring to university schools of business: "Students in schools of business in America are taught that there is a profession of management; that they are ready to step into top jobs. This is a cruel hoax. Most students have had no experience in production or in sales." (p. 130)*

- *Poor teaching of statistical methods in industry.*

- *Use of Military Standard 105D and other tables for acceptance.*

- *"Our quality control department takes care of all our problems."*

- *False starts.*

- *"We installed quality control."*

- *The unmanned computer.*

- *The supposition that it is only necessary to meet specifications.*

- *The fallacy of zero defects.*

- *Inadequate testing of prototypes.*

- *"Anyone that comes to try to help us must understand all about our business." (p. 143)*

The entire list of diseases and obstacles with explanatory text for each point are on pages 97-148 of Deming's *Out of the Crisis.*

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